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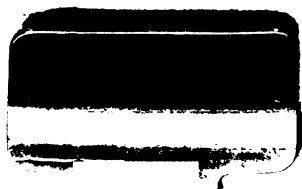
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Society Exhibit, 1913 State Fair. View from South Entrance.

ANNUAL REPORT

OF THE

Wisconsin State Horticultural
Society

For the Year 1914

VOL. XLIV

F. CRANFIELD, Editor.

MADISON, WIS.



MADISON, WISCONSIN
DEMOCRAT PRINTING COMPANY, STATE PRINTER
1914

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1914

LETTER OF TRANSMITTAL

MADISON, WIS., MARCH 1, 1914.

To His Excellency, FRANCIS E. MCGOVERN,

Governor of Wisconsin.

DEAR SIR:—I have the honor to transmit to you herewith the Forty-fourth Annual Report of the Wisconsin State Horticultural Society.

Respectfully,

FREDERIC CRANEFIELD,

Secretary.

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OFFICERS AND COMMITTEES, 1914

OFFICERS.

J. S. PALMER, President.....	Baraboo
F. KERN, Vice President.....	Bayfield
L. G. KELLOGG, Treasurer.....	Ripon
F. CRANEFIELD, Secretary.....	Madison

EXECUTIVE COMMITTEE.

J. S. Palmer.....	Ex Officio
F. Kern	Ex Officio
L. G. Kellogg.....	Ex Officio
F. Crane field	Ex Officio
1st Dist., A. J. Smith.....	Lake Geneva
2nd Dist., R. J. Coe.....	Fort Atkinson
3rd Dist., Lewis Post	Madison
4th Dist., Jas. Livingstone	Milwaukee
5th Dist., Henry Wilke	Milwaukee
6th Dist., N. A. Rasmussen.....	Oshkosh
7th Dist., Wm. Toole	Baraboo
8th Dist., Howard Smith	Aurorahville
9th Dist., A. W. Lawrence.....	Sturgeon Bay
10th Dist., C. L. Richardson.....	Chippewa Falls
11th Dist., F. V. Holston.....	Bayfield

BOARD OF MANAGERS.

J. S. PALMER

L. G. KELLOGG

F. CRANEFIELD

COMMITTEE ON TRIAL ORCHARDS.

L. G. KELLOGG, term expires.....	Jan. 1917.
J. A. HAYS, term expires.....	Jan. 1916.
N. A. RASMUSSEN, term expires.....	Jan. 1915.

LOCATION OF TRIAL AND DEMONSTRATION ORCHARDS.

Wausau, Marathon county, 10 acres.....	Established 1897.
Poplar, Douglas county, 7 acres.....	Established 1904.
Maple, Douglas county, 3 acres.....	Established 1906.
Manitowoc, Manitowoc county, 6 acres.....	Established 1907.
Gays Mills, Crawford county, 8 acres, (1 A Grapes) ..	Established 1907.
Whitehall, Trempealeau county, 5 acres.....	Established 1908.
Lake Geneva, Walworth county, 8 acres.....	Established 1908.
Sparta, Monroe county, 1 acre (Grape Station).....	Established 1908.
Pewaukee, Waukesha county, 3 acres.....	Established 1912.
Baraboo, Sauk county, 3 acres.....	Established 1912.
Holcombe, Chippewa county, 3 acres.....	Established 1913.

CONSTITUTION

Article 1. This Society shall be known as "The Wisconsin State Horticultural Society" and its location shall be at the city of Madison, Dane county, Wisconsin, where its principal office shall be maintained.

Article 2. The object of this Society shall be the advancement of the art and science of horticulture throughout the state.

Article 3., This Society is formed without capital stock.

Article 4. This Society shall consist of life members, annual members, honorary life members, and honorary annual members. Wives of such members shall be entitled to the privileges of full membership. The fees for membership shall be fixed by the Executive Committee.

Honorary annual members may, by vote, be elected and invited to participate in the proceedings of the Society. Honorary life members shall be elected by vote of the Society, and shall be distinguished for special merit in horticultural and kindred sciences, or shall confer some particular benefit upon the Society.

Article 5. The general officers of the Society shall be a President, Vice President, Secretary, Treasurer and an Executive Committee, consisting of the foregoing officers and one additional member from each congressional district, a majority of whom shall constitute a quorum at any of its meetings.

The officers aforesaid, except the Secretary, shall be elected, by ballot, at the annual meeting, and shall hold office for one year thereafter and until their respective successors are elected. The Secretary shall be appointed by the Executive Committee at its annual meeting after the election of officers and shall hold office for one year thereafter or until his successor is appointed.

Article 6. The principal duties of the general officers shall be as follows:

The President shall preside at all meetings of the Society and of the Executive Committee, shall exercise a general supervision and control of the business and affairs of the Society, and shall sign all leases, deeds and instruments for the transfer, conveyance or assignment of the corporate property, and all contracts, papers and instruments necessary or convenient in the transaction of the business of the Society, and when necessary, acknowledge the same.

The Vice President shall act as President in case of the absence, disability or removal of the President.

The Secretary shall conduct the general correspondence of the Society and keep a record of the business and of the proceedings at all meetings of the Society and of the Executive Committee; he shall keep, safely and systematically, all books, records, papers and documents belonging or pertaining to the Society or the business thereof; he shall countersign all deeds, leases and conveyances, and, when necessary, acknowledge the same.

The Treasurer shall receive and safely keep all moneys, notes, securities and property of the Society, which may come into his hands and shall pay out or dispose of the same only upon such terms and conditions as the Executive Committee may direct or the by-laws provide. He shall keep a correct account of all moneys received and disbursed and shall render such account of the same as shall be required by the Executive Committee or prescribed in the by-laws. And he shall execute a bond to the Society, in such sum, and with such sureties, as the Executive Committee shall approve, conditioned upon the faithful performance of his duties, and for the payment and delivery to his successor of all the moneys and property of the Society in his hands or under his control; which bond when approved shall be filed with the Secretary.

The said officers shall perform such other or additional duties as may be required and any of the duties and powers of said officers may be performed or exercised, as far as is lawful, by such other officers, persons or committees as the Executive Committee may provide.

Article 7. The members of the Executive Committee from the several congressional districts shall be chosen by the delegates of their respective county or local societies present at the annual meeting of this Society, or in the case of the absence of delegates from such societies or in case of failure to elect, such members shall be chosen from among the members of this Society present from such districts. But if any district is not represented the vacancy shall be filled by vote of the members of this Society present at the annual meeting.

Article 8. The term "County and Local Horticultural Societies" shall include any organization that shall have for its object the advancement of the interests of its members in the growing or sale of horticultural crops; provided that such society acts by authority of a regularly adopted constitution and makes an annual report to the Secretary of the state society.

Article 9. The Society shall hold its annual meeting for the election of officers, exhibition of fruits, and discussions, in the city of Madison, Wisconsin. Other meetings shall be held at such time and place as the Executive Committee may direct.

Article 10. Only persons holding memberships according to the regulations of the Society shall be members of it.

Article 11. This Constitution, with the accompanying by-laws, may be amended, at any regular meeting of this Society by a two-thirds vote of the members present; provided that such amendment is presented in writing.

RULES AND BY-LAWS

Article 1.—Membership.

Sec. 1. The Secretary shall decide upon all applications for membership in accordance with the Constitution and By-laws of the Society.

Sec. 2. Any member maliciously or intentionally injuring or working in opposition to the Society or its purposes in promoting horticulture may upon return of his membership fee be summarily expelled.

Article II.—Meetings.

Sec. 1. The Executive Committee may fix the time and place for holding the annual meeting of the Society, if the last meeting thereof failed to do so and may call such meeting by giving at least thirty days' notice to each member. Such notice shall be given by the Secretary, by mailing the same, postage prepaid, to each member at his last known address.

Sec. 2. Notice of a special meeting shall be mailed to each member at his last known address by the Secretary at least six days before such meeting is to be held. Such notice shall state the business to be transacted and the date, hour and place of meeting, and no business other than that stated in the notice shall be considered at such meeting.

Article III.—Duties of Officers—The President.

Sec. 1. The President shall preside at all meetings of the Society and of the Executive Committee; he shall, with the advice of the Secretary, call all meetings of the Society if the Executive Committee fail so to do; he shall appoint the delegates to the meetings of the other State Horticultural Societies; he shall have a general supervision of the business and affairs of the Society, and he shall deliver an annual address upon some subject connected with horticulture.

Sec. 2. He shall sign and acknowledge all leases, deeds, and instruments for the conveyance or transfer of the Society's property; and all other contracts, papers and instruments necessary or convenient in transacting its business.

Sec. 3. He shall sign all orders drawn on the treasurer for the payment of bills, accounts and claims audited by the Board of Managers and none other.

Sec. 4. In case of the absence from any cause of both the President and Vice President the members present, if a quorum, shall elect one of their number temporary president.

Article IV.—The Secretary.

Sec. 1. The Secretary shall attend to all the correspondence of the Society, he shall keep a correct and complete record of the business and of the proceedings at all meetings of the members and of the Executive Committee.

Sec. 2. He shall superintend the publication of the Reports of the Transactions of the Society and publish or cause to be published such special bulletins on timely and appropriate subjects and such special reports of the condition and results of experimental work in the Trial Orchards and Trial Stations as the Board of Managers may direct.

Sec. 3. He shall present a detailed report of the affairs of the Society at its annual meeting. He shall endeavor to secure reports from the various committees, and from local societies of the condition and progress of horticulture throughout the state and report the same to the Society. It shall be his duty to make a report to the Governor of the State of the transactions of the Society according to the provisions of the statutes for state reports.

Sec. 4. He shall be superintendent of all Trial Orchards and Trial Stations. In that capacity he shall supervise the planting and cultivation of, and exercise general control over the same, subject to the directions of the Trial Orchard Committee.

Sec. 5. He shall engross in the general record book of the Society a true copy of the Constitution, Rules and By-laws, and all amendments thereto and all resolutions of the Society and of the Executive Committee.

Sec. 6. He shall keep a record book in which shall be entered the names of all members of the Society from its organization, the place of residence, time of acquiring membership, and time of cessation of same.

Sec. 7. He shall notify all persons elected to office within ten days thereafter, if such persons were not present at the election.

Sec. 8. He shall keep a book in which a correct list of the property of the Society shall be entered. He shall draw all orders, checks, etc., ordered by the Executive Committee or Board of Managers and countersign the same when signed by the President.

Sec. 9. He shall keep a stub or record of all orders, checks, etc., drawn and delivered, showing the date and amount thereof and to whom and for what purpose the same was issued.

Sec. 10. He shall receive all fees for membership, give proper receipts for the same, and unless otherwise directed by the Executive Committee, shall pay the money to the Treasurer, taking his receipt therefor.

Article V.—The Treasurer.

Sec. 1. The Treasurer shall, before entering upon the duties of his office, execute a bond to the Society in such sum and with such sureties as the Executive Committee may direct, conditioned as provided in the Constitution.

Sec. 2. He shall receive and be responsible for the safe keeping of all money, notes, securities, credits, etc., of any and every nature, belonging to the Society which shall come into his hands.

Sec. 3. He shall keep proper books of account and a true and complete record of all business transacted by him for the Society; he shall keep proper vouchers for all money disbursed and shall render such accounts and statements of the moneys received, disbursed and on hand, and generally of all matters pertaining to his office as the Executive Committee may require or the By-laws direct.

Sec. 4. He shall disburse the money of the Society only on the written order of the President, countersigned by the Secretary, and shall make an annual report of the receipts and disbursements and furnish the Secretary with a copy of the same on or before the first day of the Annual Meeting.

Article VI.—The Executive Committee.

Sec. 1. The Executive Committee shall have the general care and management of the property, affairs, and business of the Society, and a majority of its members shall constitute a quorum. The President and Secretary of the Society shall be President and Secretary of the Executive Committee.

Sec. 2. Meetings of the Committee may be called by the President, the Secretary, or by the Secretary on the written request of five of its members.

Sec. 3. They shall fix the amount of the Treasurer's bond, the number of his sureties and approve the same. They may require any other officer, agent, or employee of the Society to execute a bond and prescribe the amount and conditions thereof, and approve the same.

Sec. 4. They may prescribe such salary or compensation for any officer, agent, or employee of the Society as they may deem proper, but not for a longer term than until the next annual meeting of the members, nor shall any officer of the Society be entitled to or receive any benefit, salary or compensation for, on account of, or during the time that he may be absent beyond the boundaries of the state unless such absence was at the request and on behalf of said Society.

Sec. 5. The Executive Committee shall have the power to remove any officer for official misconduct or neglect of the duties of his office. In case of vacancy in any office, either by resignation, removal or otherwise, such vacancy shall be filled by appointment by the said Committee, but such person shall hold office only for the unexpired portion of the term.

Sec. 6. The Executive Committee shall make such rules and regulations for the conduct of the business of the Society, not inconsistent with law, the Constitution, or the Rules and By-laws, as they shall deem expedient and for the best interests of the Society.

Article VII.—Committees.

Sec. 1. The President, Treasurer and Secretary shall constitute a Board of Managers which may conduct any business deemed necessary for the Society in the absence of the Executive Committee. All bills against the Society must be audited by the Board of Managers before being paid.

Sec. 2. Regular meetings of the Board of Managers shall be held bi-monthly to audit accounts and transact other business; special meetings may be called by any member of the Board.

Sec. 3. The president shall annually appoint the following standing committees—

Committee on Finance of three members, and one member of the committee on Trial Orchards and Trial Stations, of three members, to be appointed for a term of 3 years, and such other committees as may from time to time be necessary.

Sec. 4. It shall be the duty of the Finance Committee to settle with the Treasurer and to examine and report upon all bills and claims against the Society which may have been presented and referred to them, provided, however, that no member of the Executive Committee shall be a member of the Finance Committee aforesaid.

Sec. 5. The Trial Orchard Committee shall have general control of the locating, planting and care of all trial orchards and trial stations, and may visit collectively each orchard and station once each year or oftener if deemed necessary. Meetings of the Committee may be called at any time by the President of the Society or by the Superintendent of Trial Orchards.

Article VIII.—Miscellaneous.

Sec. 1. The foregoing Rules and By-laws shall take effect and be in force from the date of their adoption.

LIST OF FRUITS RECOMMENDED FOR CULTURE IN WISCONSIN

The behavior of varieties of fruits is influenced very largely by environment. The conditions of soil, exposure and latitude over such an extensive area as the state of Wisconsin vary greatly and no list can be given that will prove satisfactory in all localities. The following provisional lists were prepared by the Trial Orchard committee. Hardiness of plant and fruit bud has been the leading thought in the selection of varieties.

APPLES (General List).

Alexander, Astrachan (Red), Autumn Strawberry, Dudley, Fall Orange, Fameuse (Snow), Golden Russett, Hibernial, Lowland Raspberry, Longfield, Lubsk Queen, McIntosh, Malinda, McMahan, Newell, Northwestern Greening, Oldenburg (Duchess), Patten Greening, Perry Russett, Plumb Cider, Scott, Tetofski, Talman (Sweet), Utter, Wealthy, Westfield (Seek-no-Further), Windsor, Wolf River, Yellow Transparent.

APPLES (Lake Shore List).

In addition to the above many other varieties including the following may be successfully grown in the southern part of the state in the counties bordering on Lake Michigan: Baldwin, Eureka, Fallawater, Gano, King, Northern Spy, Pewaukee, Willow Twig, York Imperial, Bellflower.

APPLES (Commercial Orchard List).

It is generally conceded that a commercial orchard should consist of but few varieties; the following are suggested: Dudley, Fameuse, Longfield, McMahan, McIntosh, Northwestern Greening, Oldenburg, Scott, Utter, Wealthy, Yellow Transparent.

APPLES (Five Varieties for Farm Orchard).

Northwestern Greening, Oldenburg (Duchess), Talman (Sweet), Wealthy, Astrachan,

CRABS.

Brier Sweet, Hyslop, Lyman, Martha, Sweet Russett,
Transcendent, Whitney.

PLUMS.

Of the classes commonly cultivated, viz.: European, Japanese
and Native or American, the last named is the most reliable.

NATIVE PLUMS.

De Soto, Forest Garden, Hammer, Hawkeye, Ocheeda,
Quaker, Rockford, Surprise, Wyant, Wolf.

EUROPEAN PLUMS.

(Not recommended except along Lake Shore). Lombard, Green
Gage, Moore's Arctic.

JAPAN PLUMS.

(Not recommended except along Lake Shore). Abundance Bur-
bank.

CHERRIES.

Early Richmond, Montmorency.

GRAPES.

Brighton, Campbell's Early, Concord, Delaware, Diamond, Green
Mountain, Moore's Early, Niagara, Worden.

BLACKBERRIES.

Briton (Ancient), Eldorado, Snyder.

STRAWBERRIES.

Varieties starred have imperfect flowers and must not be planted
alone.

Aroma, Bederwood, *Crescent, Clyde, Dunlap, Enhance,
Gandy, Glen Mary, *Haverland, Lovett, *Sample, Splen-
did, *Warfield.

TWO VARIETIES STRAWBERRIES FOR FARM GARDEN.

Dunlap, *Warfield.

RASPBERRIES.

Black: Conrath, Cumberland, Gregg, Older, Plum Farmer.
Red: Cuthbert, Loudon, Marlboro.
Purple: Columbian.

CURRANTS.

Red: Red Cross, Red Dutch, Long Branch Holland, Victoria, Perfection.
White: White Grape.
Black: Lee's Prolific, Naples.

GOOSEBERRIES.

Downing.

PEARS.

On account of the prevalence of blight and winter killing, pears are not generally recommended for Wisconsin. Good crops are occasionally produced under favorable conditions, especially in the south-eastern part of the state. The following list includes both early and late varieties.

Anjou, Bartlett, Clairgeau, Clapp Favorite, Early Bergamot, Flemish Beauty, Idaho, Kieffer, Laurence, Louise, Seckel, Sheldon, Vermont Beauty.

b.—Hort.

TREES AND SHRUBS RECOMMENDED

EVERGREENS.

For screens and windbreaks—Norway Spruce, White Spruce, White Pine, Austrian Pine, Scotch Pine.

For hedges and screens for shearing—Norway Spruce, American Arbor Vitae, Red Cedar.

For lawns—Norway Spruce for backgrounds. For groups—American Arbor Vitae, Red Cedar, White Spruce, Colorado Blue Spruce, Austrian Pine, Scotch Pine.

For small lawns—Arbor Vitae, Savin Juniper, Mugho Pine.

DECIDUOUS TREES.

The more desirable ones are starred, and a further selection of five is indicated by double stars.

**American Elm, Box Elder, Black Cherry, Carolina Poplar, **Green Ash, *Hackberry, Honey Locust, Larch, **Linden, **Norway Maple, *Scarlet Maple, **Silver Maple, *Sugar Maple, Scarlet Oak, *White Oak, White Ash.

DECIDUOUS ORNAMENTAL TREES.

This class includes smaller deciduous trees of more value for ornament than for shade or defense.

Crab (native), also Bechtel's double flowering crab, Cut-leaved Weeping Birch, Tartarian Maple, Ginnala Maple, Kentucky Coffee Tree, Mountain Ash, Weeping Willow, Russian Mulberry.

LIST OF SHRUBS RECOMMENDED.*

Common Name.	Scientific Name.
Thunberg's Barberry	Berberis Thunbergii
Common Barberry	Berberis vulgaris
Purple-leaved Barberry	Berberis vulgaris var. atropurpurea
Purple Filbert	Corylus maxima var. purpurea
Weigela (rose)	Diervilla florida
Weigela (white)	Diervilla candida
Weigela (Eva Rathke)	Diervilla hybrida
Desbois Weigela	Diervilla hybrida var. Desboisii
Silver Berry	Eleagnus argentea

*From bulletin 108, Wisconsin Experiment Station, by F. Cranefield.

Strawberry Tree	<i>Euonymus Europaeus</i>
Althea	<i>Hibiscus Syriacus</i>
Sea Buckthorn	<i>Hippophae rhamnoides</i>
Garden Hydrangea	<i>Hydrangea paniculata</i> gr.
Ruprecht's Honeysuckle	<i>Lonicera Ruprechtiana</i>
Tartarian Honeysuckle	<i>Lonicera Tartarica</i>
Tea's Weeping Mulberry	<i>Morus Alba</i> var.
Mock Orange	<i>Philadelphus coronarius</i>
Golden Mock Orange	<i>Philadelphus coronarius</i> var. <i>aurea</i>
Mock Orange large fl	<i>Philadelphus inodorus</i>
Shrubby Cinque Foil	<i>Potentilla fruticosa</i>
Russian Almond	<i>Prunus Nana</i>
Rhodotypos	<i>Rhodotypos kerrioides</i>
Smoke Bush	<i>Rhus Cotinus</i>
Missouri Flowering Currant	<i>Ribes aureum</i>
Rose Acacia	<i>Robinia hispida</i>
Japanese Rose	<i>Rosa rugosa</i>
Golden Elder	<i>Sambucus nigra</i> var. <i>aurea</i>
Buffalo Berry	<i>Shepherdia argentea</i>
Bumalda Spiraea	<i>Spiraea Bumalda</i>
Anthony Waterer Spiraea	<i>Spiraea Bumalda</i> var.
Billard's Spiraea	<i>Spiraea Billardii</i>
Douglas' Spiraea	<i>Spiraea Douglassi</i>
Japanese Spiraea	<i>Spiraea Japonica</i>
Meadow Sweet Spiraea	<i>Spiraea salicifolia</i>
Van Houten's Spiraea	<i>Spiraea Van Houtte</i>
Persian Lilac	<i>Syringa Persica</i>
Chinese Lilac	<i>Syringa villosa</i>
Common Lilac	<i>Syringa vulgaris</i>
Amur. Tamarix. Tamarix Pallasi Desv. (Tamarix Amurensis Hort.)	
Snowball	<i>Viburnum Opulus</i> vr. <i>sterile</i>

ROSES.

Hardy garden—Harrison Yellow, Persian Yellow, Madame Plantier. Twelve varieties hybrid perpetual—Paul Neyron, Mrs. J. H. Laing, Gen. Jacqueminot, Dinsmore, Marshall P. Wilder, Coquettes des Blanches, Earl of Dufferin, Jules de Margottin, Vick's Caprice, Magna Charta, Prince Camille de Rohan, General Washington.

Moss roses—Perpetual White, Salet, Paul Fontine, Henry Martin.

Climbers—Prairie Queen, Russell's Cottage, Seven Sisters, Gem of the Prairies, Crimson Rambler, Dorothy Perkins.

Five hybrid perpetual roses for the garden: General Jacqueminot, Magna Charta, Margaret Dixon, Mrs. John Laing, Paul Neyron.

COMPARATIVE HEIGHT AT MATURITY OF DIFFERENT SHRUBS.

The height at maturity of the different species must be considered when planting in groups or borders. This will depend so much upon their environment that it is difficult to give the height in feet that any species may be expected to attain. When different kinds are planted under like conditions it may be assumed that relative

heights will be maintained. The following may serve as a partial guide in planting:

Tall—10 to 15 Feet.

Barberry (Common)	Mock Orange
Lilac, Common	Honeysuckle, Slender
Lilac, Japanese	Sea Buckthorn
Golden Elder	Honeysuckle, Tartarian
Lilac Jossika's	Siberian pea tree (tall)
Honeysuckle, Fly	Honeysuckle, Tartarian white

Medium—6 to 10 Feet.

Barberry, purple	Spiraea Douglas
Crandall Currant	Purple Filbert
Silver Berry	Spiraea, Three-lobed
Honeysuckle, Blue	Rose Acacia
Strawberry Tree	Spiraea, Van Houten's
Japanese Rose	Russian Almond
Spiraea, Billard's	Weeping Mulberry
Lilac, Chinese	Siberian Pea tree (dwarf)
Lilac, Persian	Wiegela

Dwarf—2 to 6 Feet.

Althea	Honeysuckle, Albert's
Spiraea, Anthony Waterer	Spiraea, Japanese
Barberry, Thunberg's	Hydrangea
Spiraea, Ash-leaved (Sorbaria)	Spiraea, Meadow Sweet
Cinquefoil	Rhodotypos
Spiraea, Bumalda	Spiraea, Plum-leaved

A LIST OF NATIVE SHRUBS DESIRABLE FOR PLANTING ON HOME GROUNDS.

Common Name.	Scientific Name.
Bearberry	Arctostaphylos Uva-ursi
New Jersey Tea	Ceanothus Americanus
Button Bush	Cephalanthus occidentalis
Prince's Pine	Cimaphila umbellata
Round-leaved Dogwood	Comptonia aspleniflora
Red Oiler Dogwood	Cornus stolonifera
Leatherwood (Wickopy)	Dirca palustris
Trailing Arbutus	Epigaea repens
Wahoo	Euonymus atropurpureus
St. John's Wort	Hypericum pyramidatum
Winterberry (Holly)	Ilex verticillata
Trailing Juniper	Juniperus procumbens
Sweet Gale	Myrica Gale
Ninebark	Physocarpus opulifolia
Buckthorn	Rhamnus catharticus
Staghorn Sumac	Rhus Typhina
Smooth Sumac	Rhus Glabra
Dwarf Sumac	Rhus copallina
Wild Red Currant	Ribes Rubrum
Wild Black Currant	Ribes floridum

Wild Rose (tall)	<i>Rosa lucida</i>
Wild Rose (dwarf)	<i>Rosa blanda</i>
Purple-flowered Raspberry	<i>Rubus odoratus</i>
White-Flowered Raspberry	<i>Rubus Nutkanus</i>
Common Elder	<i>Sambucus Canadensis</i>
Scarlet Elder	<i>Sambucus pubens</i>
Snowberry	<i>Symphoricarpus racemosus</i>
Coral Berry	<i>Symphoricarpus vulgaris</i>
Ground Hemlock	<i>Taxus baccata</i>
Sheepberry	<i>Viburnum lentago</i>
Black Haw	<i>Viburnum dentatum</i>
.....	<i>Viburnum acerifolium</i>
Bush Cranberry	<i>Viburnum opulus</i>
Prickly Ash	<i>Zantoxylum Americanum</i>

SIX SHRUBS FOR HOME GROUNDS.

The following are all reliably hardy in any part of the State:

Common Lilac, Tartarian Honeysuckle, *Rosa Rugosa*, Mock Orange or *Syringa*, Van Houten's *Spiraea*, Common Barberry.

THREE HARDY PERENNIAL VINES.

Ampelopsis or American Ivy (native in southern Wisconsin), Wild Grape, Trumpet Honeysuckle.

SPRING FLOWERING BULBS.

Tulips, Single dwarf; Duc van Tholl pink, scarlet, white.

Tulip medium; red Artus, yellow Chrysolora, pink Cottage Maid.

Hyacinth single: pink Charles Dickens, white Baroness von Thuyll, blue Baron von Thuyll.

Narcissus (daffodil), Von Slon.

Crocus: Mixed.

Tulips and other Holland bulbs must be planted in September or October and bloom early in spring.

BLACK LIST

A LIST OF SHRUBS ALL OF WHICH HAVE BEEN TESTED ON
THE GROUNDS OF THE EXPERIMENT STATION AT
MADISON AND FOUND UNSATISFACTORY.

Common Name.	Scientific Name.
Rhododendron	Azalea arborescens
Rhododendron	Azalea viscoea
Azalea	Azalea nudiflora
Azalea	Azalea mollis
Sweet-scented shrub	Calycanthus floridus
Blue Spiraea	Caryopteris Mastacanthus
White Fringe	Chionanthus Virginica
Sweet Pepperbush	Clethra alnifolia
Bladder Senna	Colutea arborescens
Flowering Dogwood	Cornus florida
Japanese Quince	Cydonia Japonica
Daphne	Daphne Cneorum
Daphne	Daphne Mezereum
Slender Deutzia	Deutzia gracilis
Goumi	Eleagnus longipes
Pearl Bush	Exochorda grandiflora
Golden Bell	Forsythia suspensa
Snowdrop tree	Halesia tetraptera
Virginia Willow	Itea Virginica
Kerria	Kerria Japonica
Common privet	Ligustrum vulgare
Paulownia	Paulownia imperialis
Purule leaved Plum ..	Prunus cerasifera var. (Prunus pissardi Hort.)
Flowering Almond	Prunus Japonica
Flowering Plum (double)	Prunus triloba
Arguta Spiraea	Spiraea Arguta
Thunberg's Spiraea	Spiraea Thunbergii

The plants of certain of the above named varieties made a good growth each year but have not blossomed unless given thorough winter protection. In this class are Bladder Senna, Flowering Almond, Flowering Plum and Golden Bell.

The Japanese Quince is hardy of bush but has not borne flowers except when given winter protection. The Goumi will only bear fruit when protected in winter. The double-flowered Almond will blossom freely if given thorough winter protection, otherwise it will kill back severely. The double-flowered Plum grows well and after a mild winter will bear flowers in advance of the leaves; unreliable, however, four years out of five if unprotected.

The others of this list have either died outright or else barely survived.

POISONS USED TO DESTROY INSECTS IN ORCHARDS AND GARDENS

PARIS GREEN.

A well known poison used to destroy biting insects, as the apple worm, tent caterpillar, potato beetle, etc.

Formula

Paris Green 1 to 2 lbs.
Fresh (unslacked) lime 1 lb.
Water 100 gals.

One-half pound of pure Paris Green to 50 gallons of water is sufficient to destroy codling moth and other insects in the orchard and fruit plantation if properly applied.

Add $\frac{1}{2}$ lb. of Paris Green to every barrel of Bordeaux mixture and make a complete spray.

ARSENATE OF LEAD.

(A Poison for Biting Insects.)

This poison is better than Paris Green for the following reasons:

- (1) It remains longer in suspension.
- (2) It adheres better to the foliage; one thorough application being sufficient for the entire season.
- (3) It may be used in any reasonable quantity without danger of injury to the foliage.

Use at the rate of 2 to 3 lbs. to 50 gals. of water or Bordeaux.

Add $2\frac{1}{2}$ lbs. of Arsenate of Lead to every barrel of Bordeaux mixture and make a complete spray.

WHITE HELLEBORE.

(For Biting Insects.)

Used to destroy currant and cabbage worms and on fruits and vegetables where more poisonous substances cannot be used with safety.

Formula

Powdered white hellebore 1 oz.
Water 2 to 3 gals.

It may also be used in the powder form mixed with flour, gypsum, soot, etc.

BORDEAUX MIXTURE.

The Universal Fungicide. Not a cure but a preventive of fungous diseases.

Formula

Copper sulphate	4 lbs.
Fresh (unslaked) lime	5 lbs.
Water	50 gals.

Dissolve the copper sulphate in 25 gals of water in one barrel or cask.

Slake the lime so as to make a paste which dilute to 25 gals. in another barrel.

The lime water should be strained to remove coarse particles which clog the nozzles in spraying.

Pour these two solutions together into a third barrel and the resultant mixture is Bordeaux.

Add 2 to 3 lbs. of Arsenate of Lead to every barrel and make a complete spray.

Caution: Use only wood, copper, earthenware or glass vessels in making Bordeaux.

Stock Solution for Bordeaux.

The above formula and directions may be followed when only small quantities are used. When ten barrels or more are used at one application always employ stock solutions.

For example. Dissolve 100 lbs. sulphate in 50 gals. water.

Slake 100 lbs. lime and dilute to 50 gals.

Then use the following formula:

Water	(approximately) 45 gals.
Sulphate Solution	2 gals.
Lime Solution	2½ gals.

LIME SULPHUR COMPOUND.

Used to destroy San Jose Scale, Oyster Shell Bark Louse and other insects; also used as a substitute for Bordeaux mixture.

Commercial Lime Sulphur.

Lime sulphur in commercial form is generally more desirable than the homemade product. particularly that made in Wisconsin since our lime does not generally contain a high percentage of calcium. In fact commercial lime sulphur can be purchased for very little more than the cost of the ingredients which are used in the homemade wash.—Prof. J. G. Sanders.

Homemade Lime Sulphur.

(From Bulletin 16, W. S. H. S.)

Formula

Fresh (unslaked) lime	15 lbs.
Flowers of Sulphur	15 lbs.
Water	50 gals.

Directions for preparation: In a kettle of at least forty gallons capacity heat twelve gallons of water. In a separate vessel mix fifteen pounds of sulphur with water enough to make a thin paste. Pour the paste into the heated water and when the mixture is near the boiling point add fifteen pounds of lime. After the lime has completely slaked, boil for one hour, stirring to prevent caking on the sides of the kettle. Then strain into the spray tank (or barrel) and add sufficient water to make fifty gallons of the mixture.

Lime-sulphur wash diluted as above is used only on dormant plants. Where large quantities are used a steam cooking plant is almost a necessity.

SELF-BOILED LIME AND SULPHUR

(Bulletin 213, N. J. Agr. Exp. Sta., Sept., 1908.)

"In this combination only the heat of the slaking lime is relied upon to unite it with the sulphur and the formula is:

Lime, best quality	40 pounds.
Sulphur—flowers	20 pounds.
Water	50 gallons.

Place the lime in a barrel and dust in the sulphur with it, so that the two may be well mingled. Add boiling water enough to start a brisk slaking, and cover with a heavy blanket to confine the heat. Add hot water as needed to keep up the slaking and stir occasionally to aid the combination. Keep this up until the lime is fully reduced and mixed with the sulphur. Then let the combination stand covered for an hour to maintain its heat; afterward dilute with warm water to the desired strength and spray at once.

It should be remembered, in making all these mixtures, that enough heat is needed to melt the sulphur and bring it into combination with the slaking lime and it matters little whether the heat comes from a fire or from slaking lime or from caustic soda. For the mixtures made without fire, the water used in slaking should be boiling hot. If cold water is used the heat of the slaking lime is used up in heating the water, and not enough remains to combine the sulphur. It is only the sulphur in combination with the lime that acts as a scale-killer. The uncombined sulphur helps nothing and the sulphur lime is a positive drawback, since it makes the wash too thick to penetrate well".

SPRAY:

WHAT?	WHY?	HOW?	WHEN?			REMARKS
			1ST SPRAYING	2D SPRAYING	3D SPRAYING	
Apple	Scab	Bordeaux Mixture	Just before Blossoms Open	Just after Blossoms Drop	10 days after 2d Spraying.	1st and 2d Spraying same as 2d and 3d for scab: merely add arsenate of lead to Bordeaux
	Codling Moth	Arsenate of Lead combined with Bordeaux	Just after Blossoms Drop	10 days later	Last week of July or 1st week of August for 2d brood	
Cherry and Plum	Oyster Shell Scale	Lime Sulphur	March or early April but before growth starts			Do not use Lime sulphur on growing plants
	Mildew and Shot-hole fungus	Bordeaux Mixture 3-4-50	When leaves are about 1/2 grown	10 to 12 days later	10 to 12 days later	
Currant and Gooseberry.	Mildew, blight and Currant worm	Bordeaux and Arsenate of Lead	When leaves are fully developed	2 to 3 weeks later		
Grapes	Mildew and Anthracnose	Bordeaux	Before leaf buds open	2 to 3 weeks later	3rd, 4th and 5th applications at intervals of 2 week, if required	
Strawberry	Leaf-spot or blight and leaf eating insects	Bordeaux and Arsenate of Lead	When first leaves appear	After blossoms fall		
Raspberry and Blackberry	Anthracnose and fungous diseases	Bordeaux	As above	2 weeks later		Spray new growth after fruit harvest

AN OUTLINE OF THE WORK OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

The Wisconsin State Horticultural Society conducts field work at eleven different points in the state as follows:

Wausau, Poplar, Maple, Whitehall, Manitowoc, Sparta, Baraboo, Holcombe, Pewaukee, Gays Mills, Lake Geneva.

The work was begun in 1897 at Wausau for the purpose of testing the hardiness and adaptability of the different varieties of tree fruits in the northern or "cut-over" regions of the state.

These orchards comprise 59 acres and 5,945 trees in addition to two acres of grapes.

The orchards at Wausau, Poplar, Maple and Holcombe, are "Trial" Orchards, being for the purpose above indicated; the Sparta vineyard is also in this class.

The remaining orchards are located in sections where tree fruits are known to thrive and are designed as "Model" or demonstration orchards to show the best methods of culture, best varieties for market, etc.

An account is opened with each of the "Model" orchards with the confident expectation that a decided margin or profit will be shown at the end of 10 or 12 years. The orchards should then yield profitable crops for 20 years longer with but moderate expense for maintenance.

In these two ways the Society hopes to demonstrate the possibilities of fruit growing in Wisconsin.

The Society has recently undertaken the task of improving the grounds of the 7,000 rural schools of the state. A comprehensive plan has been adopted and the first steps taken.

ADDITIONAL AIMS AND PURPOSES OF THE WISCONSIN STATE HORTICULTURAL SOCIETY.

Organized in 1865, being the legitimate successor of the Western Fruit Growers' Association, which was organized in 1853.

Chartered by the state of Wisconsin in 1871.

Purely an educational institution.

Its purpose the advancement of every branch of horticulture throughout the state.

Aims to accomplish this through publications, individual help and Conventions (two yearly).

Issues an annual report containing articles by experts on orchard culture, small fruit and vegetable gardening and the decoration of home grounds. Sent free to members.

Issues a monthly magazine, Wisconsin Horticulture, which is sent free to members.

WE ANSWER QUESTIONS.

Individual help is furnished through the Secretary, who obtains from reliable sources information on any horticultural topic. No charges for such services.

Receives an annual appropriation from the state for the support of the field work and other activities.

Extends an urgent invitation, a promise of help and the hand of fellowship to all who want to learn about the growing of fruit, flowers or vegetables; to all who love the beautiful in nature a hearty welcome is assured.

Cordially invites every person in Wisconsin who wants to know something about fruit, flowers or vegetables, to become a member as such persons are needed to help along the splendid work in which the Society is engaged.

Frederic Cranefield,
Secretary W. S. H. S.,
Madison.

WISCONSIN HORTICULTURE

A **WISCONSIN MAGAZINE** published by the **WISCONSIN STATE HORTICULTURAL SOCIETY** containing each month articles on fruit, flower and vegetable growing written by **WISCONSIN** growers for **WISCONSIN** conditions.

In this respect it is in a class by itself. Horticultural papers published for profit must cover the whole country, or aim to do so, and sometimes the information gets pretty thin from being spread so far.

WISCONSIN HORTICULTURE is not published for the purpose of making money but exclusively for the benefit of members of the **STATE HORTICULTURAL SOCIETY**.

It is better—for **WISCONSIN** people, than any other horticultural paper published. It tells the best varieties to plant in **WISCONSIN**, the best methods of cultivation for **WISCONSIN**. It's a paper for the home gardener and fruit grower as well as for the big grower.

"WE ANSWER QUESTIONS" is the slogan of the Society. Every question answered, first by personal letter and then in the paper.

Every dollar received for fees (subscriptions) and advertising is put into the paper.

Honest nurserymen advertise in **WISCONSIN HORTICULTURE** and only that kind. The other kind cannot buy space.

The paper is worth **TEN DOLLARS** a year but may be had by any one for **FIFTY CENTS**.

This price, 50 cents, includes membership in the **STATE HORTICULTURAL SOCIETY**.

A dollar bill pays for two years.

Frederic Craneheld,
Secretary W. S. H. S.,
Madison.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society

WINTER MEETING

Madison, January 6, 7 and 8, 1914.

Tuesday Afternoon, January 6, 2 P. M.

The meeting was held at the Assembly Chamber, Capitol Building, and was called to order by President J. S. Palmer. The President then introduced Hon. J. S. Donald, Secretary of State.

Hon. John S. Donald:

Ladies and Gentlemen:—As I came through the corridor I felt that I would very much rather take part in what I saw there than to take a part in the exercises that you are holding in here. The display of fruit on exhibition would do credit to a county fair and the large variety of apples with their high color and tasty arrangement is very attractive.

However, I assure you that I am very glad indeed to have an opportunity to say a word of welcome to you. I presume that I could do so with much better grace if I were to say the keys of the city are yours while you remain. I am not in a position to say this but I do greet you as one who has raised a few apples, grapes and strawberries on the farm for family consumption, appreciating the work which you are doing and realizing that it is more easy to talk at these meetings than to do the real and actual labor of putting to use the knowledge which we already have in regard to the raising of fruit.

Your presence bespeaks your interest in the industries in which you are engaged and of which you have met to obtain more knowledge that you may better succeed in your work. I believe

that to our state rightfully belongs the credit of having the oldest horticultural society, which you are maintaining and using, for the promotion of more and better fruits on our farms and in our vineyards.

Our state has followed a policy of giving aid to various associations. Your association is now receiving \$9,000 per annum and also some encouragement through agricultural societies. You are now also to be aided by a nursery inspector for which \$3,000 is appropriated by the legislature. It is for you to make the most of aid that is given to you for future appropriations should be governed by the benefits derived. I feel that the appropriations that are given to the various societies and associations of this state is money well expended for this encouragement undoubtedly has been the means of assisting many societies or organizations to work and to hold together and to develop their industry. It takes money on the part of the state to do this but I believe it is returned many fold through our general prosperity. The supremacy of Wisconsin in the many industries is the best evidence that we have been getting value received. The progress in fruit growing is no exception. With increased production comes increased demand. It is hailed as beneficial as food and as healthful and in some form will be found on the table nearly every day of the year. A young man selling fruit at a stand got this idea that it is healthful to eat fruit, and he adopted this motto, "An apple a day keeps the doctor away." He was very successful in his sales. Right across the street was a man selling vegetables and observing the success of his rival, conceived the idea that he should do something of the same nature so he adopted the slogan, "An onion a day will keep everybody away." I imagine he was successful also.

I sometimes feel that we hardly appreciate the opportunities that we have in Wisconsin for the production of the more hardy fruits. We do not fully appreciate the location or position of this state here at the head of the Mississippi Valley, the largest valley with one exception in the world—the Valley of the Amazon is larger than the Mississippi. Our advantages as to climate, rainfall and soil, I think is unexcelled anywhere and the market advantages are unsurpassed. Four years ago this winter I had the privilege of spending a little time in California and I had a very good opportunity to learn something of the fruit industry in the southern part of the state. We were out from Los Angeles a little way, just in the orange growing district. A friend was a member of the local fruit packing association. It was the year of the severe freeze and I had the privilege of riding with the directors of the association when they inspected the fruit in that locality. When we talk about the restrictions of law and inspection and inspectors in this state, I do not think we appreciate what they are doing in some other places and how they are restricted and how the members of the association are willing, for the benefits derived, to live up to their rules.

The directors in visiting the orchards determined what fruit might be picked and sold through the exchange, permitting in some instances oranges to be picked from one side of the tree and not from the other owing to the condition of the fruit. Often bushels and bushels of oranges that would pass as perfect to one who was not a judge, were thrown away because their slight imperfection would have injured the reputation of the brand used by the Exchange. So far as I know, there was not a single complaint by any of the growers, but they were willing and ready to comply with the rules of picking, packing and shipping, to the last detail in order to maintain the standard of quality. We should think more of quality in all of our productions.

I do not feel that it is necessary to say very much to you growers in Wisconsin of the advantages of coöperation because we are aware that all who are talking of coöperation are looking to the horticulturists as being pioneers and the many associations which you have that are successful. I think you fully realize the advantages of coöperative growing and coöperative marketing over those of private endeavor.

I wish your society and you individually every success, and trust that your meetings will be of the greatest benefit to you and that you will realize to the fullest the object of your coming together. I thank you.

ANNUAL ADDRESS.

PRES. J. S. PALMER.

As we meet here for our 48th Annual Convention we see with pleasure many new faces and note with sadness the absence of those whom we have been accustomed to greet in years past.

Our Society at the beginning of this new year is in a prosperous condition. The change made by the legislature in taking over our accounts and auditing and paying all bills put us on a sound financial basis—as a ward of the State of Wisconsin.

To keep pace with the other increasing interests in horticultural matters, we must ever widen our field of activities and in no part of the work of the society can this be better accomplished than with our Trial Orchards.

Wherever these orchards have been planted in the newer portions of the state, they are proving a very valuable object lesson to the settlers, and are encouraging the planting and care of fruit trees.

We have many requests for the establishments of these "demonstration orchards" which unfortunately we are unable to grant, at the present, but I hope in the future the society may be able to

carry this most important branch of its work wherever there is a call.

In the management of these orchards, it would be well for this society to work out and adopt a certain and scientific method to be followed as closely as local conditions will permit, covering the work for a term of years and governing planting, cultivation, spraying, pruning, and thinning, and to this might be added, picking, grading, packing and marketing, with the most approved and up-to-date methods, thus carrying our demonstration to a logical conclusion.

Perhaps the most severe criticism our society has ever received has come from the methods employed in the management of its Trial Orchards—and in this branch of our work we can afford to make no mistakes.

Among the most valuable varieties of apples grown in Wisconsin, it is an interesting fact that the native seedling constitutes so large a portion, but with our modern methods of propagation we have little prospect of originating any more new varieties.

I believe that we should establish a nursery where the chance seedlings, found in many places may be collected and tested, seeds planted from our best varieties, with a view to originating new varieties, and perhaps some experiments in artificial cross fertilization could be worked out to add to our list of Wisconsin apples.

During the season just past, a campaign of advertising was inaugurated to call attention to the position Wisconsin occupies among the fruit growing states, and to do this, Wisconsin apples were exhibited wherever an opportunity was offered.

The first exhibit was in August, at the International Apple Shippers' Convention held in Cleveland, Ohio. Although apples at this time were only partly grown, our apple show attracted much attention and received favorable comment both at the Convention, and during the shipping season; which led to some practical results by securing markets for our apples in other states. Several prizes were awarded Wisconsin apples at this show.

The display of Wisconsin apples at the State Fair was most complete and showed that Wisconsin does grow apples of a quality to command respect in any market and in quantity worthy to be considered a very important factor in the general supply.

From the Fair the apple display was transferred to one of the most conspicuous down town windows where it made a very attractive show. At the State Fair for the first time, apples were shown in commercial packages, and this feature of the show disclosed some interesting facts. In the barrel display but a few were so packed as to arrive in a presentable condition without refacing. Some were in old salt barrels and other unsuitable packages, showing we still have much to learn in preparing our fruit for market.

At the meeting of the American Pomological Society held at Washington, in November, a very good collection of the important Wisconsin seedling made an interesting exhibit.

In the past few years the small fruit business has not received the attention that it deserves and consequently the supply is not adequate to the demand. At present no branch of the fruit business offers greater inducements than this.

In all agricultural and horticultural lines, Wisconsin occupies a very conspicuous place and our society has a reputation to sustain as leader among kindred societies. So let us all work together for the general up-building of the horticultural interests of the great State of Wisconsin.

ANNUAL REPORT.

FREDERIC CRANEFIELD, Secretary.

I take great pleasure in submitting herewith my tenth annual report as Secretary of this Society.

In the record of events for the year past there is little that is new and nothing that is startling.

It should not be inferred from this that nothing has been accomplished for all of the work heretofore initiated has been carried on satisfactorily.

Two conventions were held during the year, the annual at Madison one year ago and the midsummer meeting at Sturgeon Bay. Both were well attended and profitable, especially the Sturgeon Bay meet which afforded many of our members an opportunity to note the remarkable development of this region since our former meeting there in 1908.

The new feature of our trial orchard work for the year is the establishing of two orchards for the testing of the newer varieties of long keeping apples.

These are located at Pewaukee and Baraboo, the former on the farm of Wm. Steele, Jr., the other on the Ski-Hi fruit farm of A. K. Bassett.

When fully completed each orchard will contain five acres planted to the following varieties, one acre each: Delicious, Senator, Tuttle, Seek-no-Further, King David.

This completes the set of four orchards authorized by the Executive Committee in 1910 for the purpose of testing the newer claimants for honors as hardy, long keeping apples—the others being merely extensions of our orchards at Lake Geneva and Gays Mills.

Contrary to my usual custom no separate report as Superintendent of Trial Orchards will be submitted but instead a brief summary of the season will be given at this time.

In all of the orchards the clean-culture-cover-crop system was followed during the year and at the close of the season all were free from weeds and the ground covered by a crop of oats.

The Wausau orchard bore 1274 bushels of apples which sold for \$505.00.

The apples in the Poplar orchard brought \$55.00.

The yield in the Gays Mills orchard amounted to 19 barrels.

The crop at Maple, the first, sold for \$13.80.

The orchards at Manitowoc, Lake Geneva and Whitehall have not yet begun to bear.

The remaining facts concerning the management, condition and prospects of the orchards will be set forth in the report of the chairman of the Trial Orchard Committee.

The Trial Orchard work to date has proven its worth and justifies in all particulars the faith and wisdom of its founders.

Not only has each of the orchards been of very great value to the particular locality in which it is located but the whole state has benefited from the work

While the applications for new orchards are constantly coming in it seems doubtful if the work can be profitably extended at the present time at least along present lines.

The fieldwork that appeals to me as being of most pressing importance is the founding of a "home for foundlings" in the apple world; in other words, a "seedling" orchard where can be brought together all of nameless offspring as well as named kinds of other states. Such an orchard might well be located in connection with one of our present orchards.

Three exhibits of Wisconsin apples were staged in 1913 and all won high honors.

An exhibit of apples from Bayfield, Sturgeon Bay, Baraboo and Richland Center shown at the Cleveland, Ohio, meeting of the International Apple Shippers Association won two ribbon prizes and a bronze sweepstakes medal in competition with the provinces of Ontario and Nova Scotia, Canada, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, Michigan and Minnesota. This exhibit also received flattering notices in all the trade papers.

The State Fair exhibit which was the main feature in the horticultural building was viewed by so many people and has been so fully described in our magazine that but little need be said of it at this time.

While the main exhibit represented an outlay of about \$800.00, it was readily conceded by all who saw it to be worth the price.

The special county exhibits of fruit from Bayfield, Crawford, Door and Sauk counties and the cranberry exhibit were probably the first of the kind ever staged at any state fair.

The third fruit show consisted of an extensive and complete exhibit of apples originated in Wisconsin shown at the biennial meeting of the American Pomological Society at Washington, D. C., November 22nd to 27th.



Exhibit State Horticultural Society, State Fair 1913. View from north end.



County Exhibits in Horticultural Building, 1913 State Fair.

These exhibits are all worth while, it is a feature that we can well afford to extend. The exhibitions so far have been largely confined to the state but as the markets for Wisconsin fruit lie almost wholly outside of the state and as our extensive commercial orchards come into bearing we should overlook no opportunity to show people of other states that excellent fruit is "Grown in Wisconsin".

Our experience in legislative matters may be briefly told. Our bill reducing the weight of a bushel of apples from 50 to 44 lbs. like poor dog Tray found bad company being merged in another measure containing several absurd provisions regulating weights and measures. This measure failed, leaving the apple bushel at 50 pounds.

We were equally unsuccessful in our efforts to secure compensation to owners of orchards trees for damage done by deer.

The plum which the appropriation committee handed us in the form of an additional appropriation of one thousand dollars was changed to a "lemon" by the Curative Act which charges to the appropriation of each department the cost of its annual report and other publications. This innocent appearing little provision really reduced our former appropriation about one hundred dollars.

Eight local societies are now affiliated with the state society viz., Bayfield, Lake Geneva, Madison, Manitowoc, Oshkosh, Poysippi, Sheboygan, Washburn and Chippewa Valley, the last named a new-comer organized February 1913 with headquarters at Eau Claire.

While all of these are more or less active the Oshkosh society which holds monthly meetings in summer for observation and consultation and in winter for discussion and entertainment seems most nearly to fulfill the objects and purposes of a local horticultural society.

The three large and active coöperative selling associations, Bayfield, Sparta and Sturgeon Bay are each yearly increasing their volume of business and are now to be considered as permanent factors in the fruit situation in Wisconsin.

Two smaller and newer but active associations one at Washburn and one at Alma Center are promising.

The magazine WISCONSIN HORTICULTURE three years old last September, seems to be filling a useful place. Financially it is now well able to take care of itself having a balance to its credit of over \$500.00.

This covers briefly and imperfectly the work of the society for the year 1913. All of our work tends to the uplift of horticulture in the state. With the rapid development of fruit growing in the state this society will find an ever increasing field of usefulness.

LOOKING BACKWARD.

The year 1913 marks no important epoch in the history of the Society, the milestone we have just reached, the 48th in the history of the Society is not marked to the members differently from many

others but to your Secretary it is an important date for to me it marks the closing of a decade.

Ten years ago I cast my lot with you and for ten years I have held your interests to be as my own. You will then, I am sure, grant me a few minutes for a review of the things done, not by me, but by the society in that period; its growth, its accomplishments and its standing in the community.

Ten years ago the Society, then 39 years of age, had 111 members, three trial orchards and an annual appropriation of \$4,000.00.

We have to-day over 1800 paid members, eleven trial stations and an annual appropriation of \$9,000.00. These three points while somewhat imposing are only the "outward and visible" evidence of our growth and work.

Ten years ago there was no bearing orchard of over fifty acres in the state. We have now hundreds of orchards of 50 to 100 acres each.

Ten years ago it is safe to say that the acreage devoted to fruit of all kinds was not over 2,000. To-day we boast of 4,000 acres of tree fruits in one county and a total of 20,000 acres planted to apples, plums and cherries, exclusive of farm and home orchards.

Ten years ago it is likely that all of the spray pumps and spray rigs in Wisconsin could have been loaded on a one-horse wagon with room left for all the fruit picking and packing implements. Spray rigs are now as common and as much used as corn planters were ten years ago and the fruit grower who does not spray is a curiosity.

Orchard cultivation and cover crops known to only a few ten years ago are now universal.

Ten years ago Wisconsin was not recognized as a fruit state while now we are decidedly and distinctly "on the map". Ten years ago the Oregon and Washington apple orchard boomer flourished in the land and any hint or suggestion that money and time might be profitably invested in fruit growing in Wisconsin was considered a huge joke. Now we have several flourishing orchard companies financed by Wisconsin people.

Ten years ago we had but one coöperative fruit selling organization in the state while now we have three with an aggregate annual business of over a quarter of a million dollars.

It would of course be going much too far to say that all of this development is due to this Society but no one will dispute that it is very largely due to our work. When we say that the development of commercial fruit growing in Wisconsin is due in a large measure to the activities and energy of the Horticultural Society we do not thereby intend to disparage in any measure the work of the horticultural department of the Agricultural College nor will any thinking person so construe it. It is not the field of the College to directly promote the planting of orchards and to enter the field of publicity setting forth the advantages of our state or any part of it for fruit

growing; to urge our people to plant orchards nor to induce people from other states to come to Wisconsin to engage in fruit growing. It has a higher mission to perform, a bigger and broader field, that of experimentation and education and it is left for us to begin where the College leaves off.

In other ways the Society has advanced in ten years. From being practically homeless we now occupy comfortable and roomy offices, housing the best horticultural library in the state. We use this office as a central bureau of information for the use of any resident of this or any other state:

For five years of this ten-year period, from 1905 to 1910 we issued bulletins, 19 in all, fashioned after those of experiment stations. While these fulfilled a purpose and were fairly well received the demand for copies outside of the membership was so limited that it was decided to suspend publication.

In place of these in 1910 the Executive Committee authorized the publication of a monthly magazine the first of its kind. At first an experiment it is now so well established that any suggestion looking to its suspension would be met with loud protest.

In many other minor but material ways we have advanced the interests of horticulture in the state, home grounds, school grounds and farm institute work.

We have forced recognition of fruit growing as a commercial proposition from the Farm Institute management and the Agricultural College; we have preached the gospel of the home, of shrubs, trees, vines and flowers as never preached before in this state.

We have in brief lived up to our obligations and to the preamble of the Charter granted to us by the State of Wisconsin in 1879, "the advancement of the art and science of horticulture throughout the state." We have been able to accomplish this because we have all worked together faithfully and heartily for a common cause.

LOOKING AHEAD.

While retrospection is an agreeable diversion it can be of value only if used as a foundation on which to build for the future and at this time we may profitably look ahead ten years.

Ten years hence, 1924, we may reasonably expect to have for the society:

Five thousand members.

An annual appropriation of \$20,000.

A weekly magazine.

Two "field" men constantly employed, in trial orchard inspection, packing demonstrations and similar work in the growing season and in horticultural institute work in winter.

In the fruit industry of Wisconsin:

One hundred thousand acres of fruit with an annual output of

twenty million dollars, the third industry in importance in the state with dairying and stock raising only outranking us.

Coöperative marketing extended to reach every grower in the state:

A buying and selling organization in each fruit producing community, these affiliating with a state wide association which in turn forms a part of an upper Mississippi valley Exchange.

On every farm a home orchard but no "farm" orchards.

On every farm a garden both for flowers as well as vegetables.

All of this and much more than ten times all this may come to pass if we work unitedly. Our field is to execute such tasks as lie in our power and then to initiate others, to propose, to suggest and to see that they are accomplished some way or somehow.

To accomplish these ends two things are needed, funds and loyal coöperation. If we furnish the second the first will come without effort.

Abstract of Reports from Local Societies for 1913.

Name of Society.	Number of members.	Membership fee.	Number of meetings during year.	Number of exhibitions.	Character of exhibits.
Bayfield Peninsula Horticultural Society.....	148	.50	4	1	Fruit and vegetables.
Madison Horticultural Society.....	30	\$1.00	4
Manitowoc County Horticultural Society.....	65	.50	2	1	Fruit, flowers and vegetables.
Oshkosh Horticultural Society.....	20	1.00	12	1	Flowers and vegetables.
Poyssippi Horticultural Society.....	26	.25	4	1	Fruit, flowers and vegetables.
Washburn Horticultural Society.....	28	1.00	6
Chippewa Valley Horticultural Society.....	17	.50	6
Lake Geneva Gardeners and Foremen's Association.....	31	2.00	28	5	Flowers.
Sheboygan County Horticultural Society.....	12	.50	1

REMARKS BY SECRETARIES OF LOCAL SOCIETIES.

Secretary FLANDERS of Bayfield Society.

"The Society has expended for civic betterment \$83.00; for state and county fair exhibits in coöperation with county committee \$50.00 and for expenses connected with meetings of the society about \$15.00."

Secretary MESINEST of Manitowoc Society.

"Much has been done along the line of improved horticulture the past few years through our society."

Secretary PETER FISHER of Oshkosh Society.

"The Oshkosh Horticultural Society holds its meeting the first Monday in each month; during the summer months we hold them at

the homes of the members where after inspecting the gardens we have a picnic supper and a short program, papers, music and discussion. During the winter months we meet at the hall of The Chamber of Commerce, where we discuss things of interest to our society. To interest children in growing flowers we offered \$8.00 in premiums for best display at the county fair of Asters, Phlox, Pansies and Zinnias. We made a successful exhibit at the Summer Meeting of the Wisconsin State Horticultural Society. We have had a very successful year as a society."

Secretary WM. H. GRIFFITHS, of Lake Geneva Gardeners and Foremens Association.—

"The members of the above association wish that the W. S. H. S. would devote one or more sessions to the discussion of matters pertaining to such subjects as Floriculture and Olericulture or such topics as would be of interest to men having charge of private estates."

FINANCIAL REPORT OF SECRETARY

January 1st, 1913, to January 1st, 1914.

	Dr.	Cr.
Received for membership fees, cash.....	\$637.48	
Received for membership fees, stamps.....	7.12	
Received for advertising.....	632.49	
Received for fruit.....	569.20	
Refund State Board of Agriculture.....	146.20	
Refund Minnesota Horticultural Society.....	28.90	
Miscellaneous cash receipts.....	15.10	
Payments to L. G. Kellogg, Treasurer.....		\$1,068.80
Payments to State Treasurer.....		960.57
Stamps for memberships.....		7.12
	\$2,036.49	\$2,036.49

TREASURER'S REPORT.

L. G. KELLOGG, Treasurer.

IN ACCOUNT WITH

THE WISCONSIN STATE HORTICULTURAL SOCIETY.

(July 1st, 1912, to July 1st, 1913.)

	Dr.	Cr.
Received from F. Craneheld, Secretary		
For Membership Fees.....	\$668.75	
For Advertising.....	610.91	
For Fruit Sales.....	251.00	
For Refund from Minnesota Horticultural Society.....	28.90	
For Refund from State Board of Agriculture.....	146.20	
For Miscellaneous Receipts.....	12.29	
Received from State Treasurer.....	7,626.69	
To Balance due Society.....	157.48	
To Error on Orders No. 695 and No. 707.....	.52	
To Balance due Treasurer.....	386.13	
By Vouchers Returned.....		\$9,888.87
	\$9,888.87	\$9,888.87

WISCONSIN STATE HORTICULTURAL SOCIETY.

L. G. KELLOGG, Treasurer,

IN ACCOUNT WITH

THE WISCONSIN STATE HORTICULTURAL SOCIETY.

(July 1st, 1913, to Aug. 1st, 1913.)

	Dr.	Cr.
Received from F. Cranefield, Secretary		
For Membership Fees.....	\$94.75	
For Advertising.....	118.30	
Received from State Treasurer.....	2,049.21	
To Balance due Treasurer.....	69.75	
By Vouchers Returned.....		\$2,332.01
	\$2,332.01	\$2,332.01

Office of Secretary,
Madison, January 7th, 1914.

REPORT OF FINANCE COMMITTEE.

Your committee have gone over the books and vouchers of the Secretary and Treasurer and have found same correct.

IRVING C. SMITH,

J. A. HAYS,

L. H. PALMER.

PAPERS AND DISCUSSIONS.

WHY CULTIVATE.

GEO. F. POTTER, Hort. Dep't. Univ. of Wis.

In beginning the discussion of such a subject, it is necessary to outline briefly what we mean by orchard cultivation and what other systems of soil management might be used in the orchard. There are two methods of managing orchard soils in which annual cultivation is a part of the program. The less desirable of these is called the clean culture system, by which the orchard is plowed in the spring as soon as the land is fit to work, that is, it is given a thorough preparation tillage, after which a maintenance tillage is carried on throughout the season using the spring tooth harrow or some similar tool. It is generally considered a better plan to conclude the cultivation about the middle of July or first of August and to sow some rank growing plant. By this means the wood is induced to ripen earlier and the following spring when the crop is turned under the store of organic matter in the soil is increased. This is in brief the well known *clean culture*, *cover crop* system of orchard soil management. So far as I know only one system, the sod mulch or Hitching's system, has ever been advocated as being equal or superior to the cultivation cover crop method. The essentials of the sod mulch system are that the orchard be sodded, and that all the grass growing be mowed and left upon the ground, more litter being added rather than any being taken away.

It must be distinctly understood that pasturing the orchard or growing of hay in it is not the true sod mulch system, and the advantages of the sod-mulch, if any, cannot be expected if these practices are followed. Either of these practices should be considered as orchard cropping, which although permissible with young orchards previous to bearing, is not to be tolerated among trees which are bearing fruit. I believe that any man who is using his orchard for pasture or growing of crops would do better to cut down two thirds of the trees, take care of the remaining one third properly and use the remaining two thirds of his land for pasture or crops. I feel safe in saying that he would get more fruit, and I believe also, more pasture and crops, than if trees and crops were both spread over the entire area.

As has been said before, however, some authorities have upheld the sod-mulch system as equal or superior to the clean culture cover crop system. Observations of commercial orchards teach us

that it is possible to grow good trees by either means, but it is hard to decide just which is the better. The man who believes in sod-mulch keeps his entire orchard in sod, and the man who believes in cultivation cultivates all his trees. But it is not fair to make a comparison unless all other conditions in the two orchards are the same. This is rarely or never the case. Therefore in matters of this sort, I find myself basing my opinions largely upon experimental evidence, where the two systems are tried out side by side in plots carefully selected to be alike in all other respects.

In this case our attention is focused upon two trials, one made at the Ohio Experiment Station, and one at the Geneva Station in New York. But we find these two bits of experimental work leading to astonishingly different conclusions. Messrs. Green and Ballou of Ohio, favor sod-mulch, while Mr. Hedrick of New York, favors cultivation. It is necessary, therefore, to examine somewhat into details.

In the Ohio experiment young trees were used. That part of the orchard which was in the sod-mulch system was seeded down and the grass cut as usual, but because the small trees occupied but little space and their root systems extended only a few feet around the points where they were set, the hay from the center of the rows was piled about them. At the end of six or seven years the report was issued, showing that the trees thus mulched were larger and that their trunks had a slightly greater diameter than those grown under the clean-culture cover crop system. The records also showed that there was a larger production upon the trees under a mulch, but as the entire crop amounted to only four bushels this data is scarcely reliable.

If we analyze the situation carefully it becomes evident that the mulch about these trees was much deeper than could be maintained in any orchard in which the roots of the trees occupied all the ground, unless litter from outside sources was available to supplement that which would grow in the orchard. The young trees could not have occupied more than one quarter of the total area, and therefore were receiving about three times as much hay as would grow beneath them. To maintain as deep a mulch as this on a bearing orchard of any size does not seem to me to be a practical plan, without further assurance that the crops will be increased largely by so doing.

I know of no other published report of an experiment in which trees were kept under a deep mulch as in this case, but I am told by Prof. Howard, that in an experiment carried on at the Nebraska Station trees under the deep mulch and under clean-culture cover crop were practically alike in size and health. Mr. Hepler also tells me that Prof. Stewart of Pennsylvania, in similar experiments found larger growth on young trees under deep mulch than in cultivated plots. These agree with the Ohio results, but the impracticability of maintaining such a mulch leads us to ask what results would be



The long evener idea as applied to spring tooth harrow in orchard cultivation at Sturgeon Bay. Orchard of W. J. Lawrence.



Spring-tooth harrow, universally used in Door Co. cherry orchards. Note that the harrow cuts close to the trees. "The man with the hoe", Mr. Ben Otis, was able to "hoe" this 8 acre orchard doing all the hand work necessary and keep up with the team.

obtained by simply mowing the grass which will grow on the ground, without adding extra litter either from outside sources or other parts of the same field. So far as I am aware no such experiment has been carried on in this country, but in the third report of the Woburn Fruit Farm in England, we find a case in which trees under cultivation were compared to trees in living sod. Those under cultivation grew four or five times as fast as those sodded. This, however, is hardly a mulch system because the grass was not mowed, and for this reason too much weight should not be placed upon these results.

In the New York experiment a ten acre orchard of bearing Baldwin trees was used. In the sod plot since all the ground needed mulch, Mr. Hedrick cut the grass which grew and allowed it to rot where it fell, but did not attempt to maintain a deep mulch by adding other litter. In the course of the work he harvested about four thousand barrels of fruit, a quantity large enough to make his data thoroughly reliable. In brief the results were as follows: The average annual production for the period of five years was 109 bushels per acre on the clean culture cover crop plot, and 72.9 bushels on the sod plot. The cost per acre of maintenance was slightly greater for the cultivated plot being a little less than \$25.00 as compared to a little over \$18.00 on the sodded area. The total net profits of the cultivated plot, however, were \$110.00 per acre as compared to \$70.00 where the trees were in sod. The apples from the cultivated orchard were larger, weighing on the average about 7 ounces as compared to 5 ounces on the sod plot. The sod grown fruit was higher in color, but not so high in quality nor did it keep as well as that from the cultivated orchard. In general the trees of the cultivated plot gave evidence of greater health as judged by growth, foliage color, and other appearances.

To briefly review this evidence, then, we find that where trees are maintained under deep mulch the growth is satisfactory, being equal to or possibly sometimes slightly better than under cultivation, but that the maintenance of such a mulch is hardly practical at least upon a large scale. Living sod around trees has resulted in injury wherever tried, and when we simply cut what grass grows upon the ground, crops are not nearly so large and health of trees is not so good as where cultivation with cover crops is used.

The latter is the more important conclusion. Why is it true? Perhaps the most important reason is in the difference in the moisture content of the soil. Let me say emphatically that no other system of soil management will conserve so large a proportion of the water in the soil as does cultivation. Prof. Hedrick in his experiment made about 120 different moisture tests, comparing the amount of water in the soil under sod mulch and under cultivation. On the average about one-third more water was found in the cultivated soil, than in that under sod. One-third more may not seem like a great deal, but a plant is not able to extract from the earth all the water it contains and the soil having one-third more *total* moisture may be

so much farther from the limit that it will have two or three times as much *water available to the trees*. This data compares cultivated with sodded soil. It may be well to add that while a deep mulch holds more moisture than sod, it is not so efficient as cultivation. The Ohio investigators have submitted data showing that under a deep mulch trees have a more extensive root system than under cultivation, and they have drawn the conclusion that this indicates greater activity and health in the tree. The point may well be questioned and the view taken that it indicates instead, that the tree is not receiving enough moisture and is developing an abnormal root system to supply the deficiency.

The second point to be considered is that of plant food supply. When the orchard is in sod the roots of the trees and of the grass must both be striving for the same food at the same time. We recognize the fact that if the grass be cut and allowed to rot that any food it may take up is returned to the soil, but as the grass roots are still there striving to take it up again, there probably is more or less competition. What is more important in relation to the food supply of the tree, however, is that the aeration, and, as has been proven by investigations of bacteriologists, the bacterial action is so restricted in sodded soils that the stores of insoluble food in the soil are very slowly released for the use of the plants growing upon it. Chiefly because of this latter fact, the food supply of a tree in a sodded orchard is very much less than in cultivated soils, a fact which is probably very important in its effect upon results obtained in such an experiment as that carried on by Prof. Hedrick. Under a deep mulch, however, conditions are better and the supply of food, particularly of nitrogen, is increased by the decaying litter.

It is also thought, although it is difficult to prove, that the roots of living grass have a poisonous effect upon fruit trees. This opinion has been advanced by both Prof. Hedrick and the Woburn experimenters. It is based upon observations of the action of roots of trees in sod plots growing out from the sod under stone fences or into cultivated fields, escaping from the sod wherever possible. Experiments at the Woburn farm also bear out the assumption. It is thought either to be a poison directly secreted by the grass roots or to be a secondary product of the action of sod upon the bacteria of the soil. It is altogether possible that this may be a factor influencing results obtained under the sod mulch system.

In conclusion I will say that as you have already gathered from my discourse, in an orchard of my own I would use a clean culture cover crop system, and that the only condition under which I would seriously entertain the thought of using any other system of orchard soil management would be that my orchard was on such steep land that cultivation would result in washing and carrying away of a large amount of soil.

THE ELEMENTS OF SPRAYING FOR INSECTS.

PROF. J. G. SANDERS, Madison, Wis.

Spraying has been aptly and justly termed "crop insurance". The annual premiums of this type of insurance are indeed very low in comparison with the annual returns, and under this form of insurance all kinds of policies are available to the agriculturist. So great are the benefits returned by careful and conscientious spraying as demonstrated in innumerable cases and under all conditions, that we wonder why all of our horticultural friends do not immediately attempt to secure the benefits derived from this comparatively ample procedure.

The problem before the horticulturist of the control of the ever increasing pests seeking to combat the grower's success, will be an ever present one and is sure to be a continuous performance. On account of this fact it will be well for all of us engaged in horticulture or intending to engage in horticulture in any branch whatsoever, to make the acquaintance of the spray pump and its accessories, and learn all its good points. It has been definitely proven that real success in horticulture can only be obtained by following out the methods of pest control which are pretty well known at this time. These methods of control, although apparently numerous when studied and considered carefully, resolve themselves finally into a comparatively simple treatment. If you would be successful, you must understand and put into practice these simpler practices of spraying or other modern treatment. In the language of a very well known advertisement, "Eventually, Why Not Now?"

The spraying in early days was carried out with a frequent lack of knowledge of the causative organisms producing diseases and injuries, but by the gradual evolution and accumulation of knowledge through modern scientific research and experimentation, solutions of many of our troubles have been evolved and we can now prescribe treatments which will bring about more or less perfect control of pests if instructions are carried out carefully.

In any type of spraying, among the first problems to be determined are those answers to the questions, Why? When? and How? The effect of treatment on the pest and the effect on the plant host are factors to be determined. Lying between these two extremes is an intermediate ground on which all spraying operations are based. To further explain this treatment, I may state that there is an intermediate position between the point of injury to the host plant and the killing point of an insect brought about by a treatment with chemicals which must always be considered in the spraying. The result always aimed at is to get the highest efficiency in the spray for controlling the pest without injuring the host plant.

It will be impossible in the short time allotted me to discuss at length the many phases of spraying, but a few statements relative to the materials used in spraying will be given.

Successful methods for the control of insect pests are based on the knowledge of at least two fundamental factors,—the feeding habits and the life history of the insect pest, with the former as probably more important. Two great classes may be defined under insect control methods, namely, *preventive* and *remedial*. Under the former method, namely, the preventive, are included many of the common farm practices generally carried on with reference to insect control such as rotation of crops, fall plowing and clean cultivation. For the control of horticultural pests the remedial methods are more common and satisfactory in most cases, which include the direct application of killing poisons or the employment of mechanical means of control.

INSECTICIDES AND THEIR APPLICATION.

As previously stated the feeding habit of an insect must be determined positively before applying proper treatment for its control. Success or failure depends on an accurate knowledge of this habit and also on the choice of a suitable insecticide to be applied at the proper time. Generally speaking, these factors are fundamental and most important.

For our purpose we can divide the insect class into two great groups with reference to feeding habits and controls as follows:—

Chewing Insects. Those insects with biting mouth parts that partially masticate the food before swallowing it. In this class are placed all of the caterpillars and chewing larval or worm-like stages of many well known insects. The remedies for this group of chewing insects consists generally of stomach poisons, which are usually some form of arsenicals.

Sucking Insects. This group includes those insects which derive their foods from plants by sucking the juices through a tubular beak or proboscis and have no biting and chewing mouth parts. Controls for this group must consist of material which kill by contact with the insect's body, since it is manifestly impossible to feed arsenical poison to insects which obtain their food from the deeper tissues of the plant. Variations of the above classification occur but for general purposes these groups are quite sharply distinguished.

Arsenical Poisons. Only a few of the many arsenical poisons are discussed here but any or all of them must be used intelligently and according to directions to secure the best results. These insecticides may be compounded at home but more uniform mixtures may generally be purchased in commercial form at little or no advance over the price of the ingredients for home manufacture. Since the passage by our state legislature in 1911 of a bill prepared by the writer requiring certain standards of purity of insecticides manufactured or offered for sale in Wisconsin, satisfactory results should be obtained with our standard commercial insecticides. There are on the market,

however, many proprietary remedies, particularly powders, sold at high prices under fancy names which are made up largely of cheap fillers and carriers, such as plaster of paris, (gypsum) lime, ashes, etc. It is far better to purchase the pure powder poison and supply the filler or carrier as needed.

Orsenate of Lead. This chemical combination or arsenic and lead has proved to be the most satisfactory arsenical poison yet produced, and has several advantages over the better known Paris green which it is rapidly replacing. It is prepared either in liquid or powdered form, the powdered form being preferably for general use since it does not deteriorate on standing. Arsenate of lead is white and shows plainly where sprayed. It remains in suspension much longer and adheres to the foliage for a longer period than Paris green and is the least caustic of the arsenites in its effect on foliage. Powdered arsenate of lead can be applied to plants without mixing it in water. For general spraying purposes 2 to 3 pounds of arsenate of lead paste or half of this weight of the powdered form is well mixed in 50 gallons of water.

Paris Green. This much more widely used insecticide is a satisfactory poison but is not so desirable as the arsenate of lead, since it washes off the plants more readily during rainy seasons and is more liable to burn the foliage unless it is used in combination with lime water. One pound of Paris green in 100 gallons of water to which has been added the milk of lime, made by slacking about 2 pounds of dry lime, has proved a thoroughly practicable insecticide. For general orchard spraying the two arsenical poisons mentioned above are satisfactory for the control of biting and chewing insects.

CONTACT POISONS FOR SUCKING INSECTS.

Under this heading we include such insects as plant lice or aphids and scale insects which secure their food by sucking the sap from the tree or plant. As previously stated, for the control of this type of pest a contact spray of an oily or corrosive nature must be used.

Kerosene Emulsion.—One of the commonest and most widely used sprays for plant lice and scale insects is kerosene emulsion, used in summer at a strength of 8 to 12 per cent of oil, and in winter from 15 to 20 per cent of oil on dormant trees. The stock solution of kerosene emulsion is made as follows: Dissolve half a pound of hard soap in one gallon of boiling rain water. To this mixture add two gallons of kerosene, first removing it from the fire and churn or pump this material back upon itself violently for five or ten minutes, until a creamy, white emulsion is secured which on cooling should have the consistency of thick, sour milk. When properly and thoroughly prepared, no separation of the oil and water should occur even after periods of several months. The above preparation is a stock solution which must be diluted before used as a spray.

For 8% emulsion add to each gallon of stock 7 gals. water

10%	"	"	5½	"	"
12%	"	"	4½	"	"
15%	"	"	3½	"	"
20%	"	"	2½	"	"
25%	"	"	1½	"	"

Tobacco Decoction. Another very effectual and safe spray for the control of plant lice particularly, is tobacco decoction or nicotine solutions. These can be purchased in commercial form at a reasonable price and can also be made at home very satisfactorily. Steep (not boil) 1 pound of tobacco stems in 2 or 3 gallons of water for 2 or 3 hours and strain off the dark liquid which can be used as a spray material. If desirable, this liquid can be mixed with a strong soap suds, thereby making it still more effective. For the control of green and black "aphis" on trees, shrubs or garden or household plants, the tobacco decoction is the most satisfactory insecticide available, since there is practically no danger to the tenderest plants.

I shall not attempt to give you the various formulas or control methods for the different insect pests and fungous diseases of our fruit trees. These can be secured by consulting the Experiment Station Bulletins where the material appears in printed form. My desire in this paper has been to call your attention to some of the fundamental features of spraying, particularly with reference to the application of the proper insecticide for the different types of insects. But above all, I want to encourage our horticulturists to a more thorough study and comprehension of the necessity of proper treatment of pests so that our fruit crops may be not only enlarged but may be of much higher quality, freer from injuries of insect pests and fungous diseases, thereby resulting in a much higher price obtainable in our markets. I hope the time will come when the "GROWN IN WISCONSIN" label will be a widely recognized trade mark, certifying clean fruit of high quality which will demand an unusual market price. I am also desirous of seeing the arrival of the day when every child will have the privilege of eating an apple every times its father consumes a cigar.

DISCUSSION.

Question: What time would you commence to spray in the spring?

Professor Sanders: The spring, at least in this latitude, is probably the best time in the year to do our general orchard spraying. The best results are obtainable with the lime-sulphur solution just at the time of the swelling of the buds on the trees. In using a lime-sulphur spray, we not only kill many of the sucking insects, such as the scale insects and plant lice, but we also control some of the fungous diseases of the tree. In other words, the lime-sulphur is what we have known as a combination spray.

Question: What quantity of lime-sulphur do you use with 50 gallons of water?

Professor Sanders: The dormant spray of lime-sulphur is generally a mixture of one part of commercial solution to nine or ten parts of water. In other words, about a ten per cent solution is a dormant spray. You could not use that strength after the leaves appear on

the trees, since about one to thirty is the proper strength of lime-sulphur to use in the summer.

Question: To which do you give the preference, powdered or paste arsenate of lead?

Professor Sanders: Other things being equal, I think the powdered arsenate of lead is desirable under general spraying conditions, because it does not deteriorate on drying out of the water and we do not want to pay freight on water from points of manufacture.

Question: Do you use the Corona brand?

Professor Sanders: The Corona brand is one of the good, safe brands that are manufactured and works all right.

Question: In using Bordeaux mixture, would you advise the buying of the commercially prepared paste or powdered form, and does it lose its strength by standing any time?

Professor Sanders: Bordeaux mixture is best made at home under proper conditions. No prepared commercial Bordeaux mixture that I know of, is as good as Bordeaux properly made at home; but it should be properly made, according to the directions in the bulletins that are available.

Question: If you are only going to spray with lime-sulphur once a year in an orchard, which would be more beneficial, spraying late in the fall or early in the spring?

Professor Sanders: The best time to spray an orchard, if you are intending to spray but once with lime-sulphur, is when the buds swell in the spring.

Question: Will one to eleven lime-sulphur kill oyster shell scale?

Professor Sanders: One to 9 or 10 per cent solution will kill oyster shell scale if put on just as late in the spring as you dare to apply it.

Question: Will that standard stock solution of lime-sulphur be deteriorated at all by freezing, if exposed to freezing weather?

Professor Sanders: It is far more advisable to prevent freezing of lime-sulphur, in fact any of the insecticides which contain water.

Question: In applying lime-sulphur for oyster shell scale at this time of the year, would it make it sticky in the spring, if you put it on now?

Professor Sanders: The application of lime-sulphur at this time of year would hardly be advisable, although it might be applied under present weather conditions, but the point in applying the lime-sulphur late in the spring, as late as possible, is that the oyster-shell scale at that time is not perhaps as closely attached to the tree as it would be earlier in the year, and the eggs are probably easier to kill at that time, at least best results have been obtained by late spring spraying.

Question: Do you find that you obtain a little more prompt action at times by using a little Paris green with arsenate of lead? It seems to me that Paris green acts a little more promptly.

Professor Sanders: The Paris green, we find, is a rather superior spray among arsenical sprays; for potato insects, it acts a little more promptly, and if it is mixed with the proper amount of lime it does better work on potato insects, but outside of potato spraying I know of no spraying in which Paris green is superior to arsenate of lead.

Question: I do not mean using it entirely, but I mean using a small portion, perhaps ten to fifteen per cent for Paris green to get a little prompter action, depending mainly on the arsenate. Have you used this combination?

Professor Sanders: I have never used those two in combination as yet. It might be advisable, but a high quality of arsenate of lead applied in sufficient strength will do all the work of Paris green with the exception of the potato crop.

Question: Have you ever tried the powdered form of lime-sulphur?

Professor Sanders: That is what is known as the soluble lime-sulphur. I have tried it; there may be some advantages in it, but I can hardly recommend it over the liquid commercial forms which we have. But you must remember that there is a tremendous variation in lime-sulphur. If you test it out with the hydrometer, there is a great variation; and it should be of a high quality to get the best results. If it is a low quality lime-sulphur, a larger quantity is needed for the application.

Question: What should the lime-sulphur test?

Professor Sanders: Well, that is pretty hard to say. It depends a great deal on the brand. I would hardly want to set any specific limit on account of the number of companies that are placing it on the market. We generally, in public State work, are rather loath to make a particular recommendation of any one type of arsenate of lead or any insecticide, or even spray pump. We prefer to give a list of three or four and let people make their own selection.

Question: Do you think it important that each man spraying should have a hydrometer and test the spray himself?

Professor Sanders: I think it is advisable to have a hydrometer. They cost only a dollar and it is certainly advisable to have one and make your own tests.

Question: Make a minimum limit as to the tests?

Professor Sanders: Make a test of what you have and you will find in almost all experiment station bulletins a list showing the proper solution for the different Beaume tests.

Question: What about lime-sulphur for scale in the summer?

Professor Sanders. You would not dare use lime-sulphur sufficiently strong to obtain the best results in the summer.

Question: Is not there a time in spring when the oystershell scales are alive?

Professor Sanders: Late in the spring you will find some young larvae of the oyster shell scale running about over the tree, and in that stage you can kill them with the summer strength of lime-sulphur. That is the only time.

The president: Will you tell us at what time of year to spray to kill the second brood of codling moth?

Professor Sanders: I would be very glad indeed to know as to what time we should spray for the second brood of codling moth. If the College of Agriculture ever gives me sufficient money to put some men in the field and determine that date after sufficient comparison and study, we can probably determine that time in different parts

of the State. It is a problem that should be worked out just as soon as possible. You can determine it for yourself by taking some of the first June drop of apples, laying them on the ground if you wish, under your trees, and erecting some kind of small breeding cage over the apples; make it of ordinary window screening, so that when the moths hatch out from the apples which you have in this little breeding cage, you would know the proper time to spray to prevent the infestation of the second brood. As yet I cannot give you specific dates for different parts of the State.

Question: Will not that vary?

Professor Sanders: It will vary somewhat in different years, probably within a week or ten days, but not very much more. But there will be a great variation between the southern part of the State, Madison or Milwaukee, and the northern districts, like the Wausau, Bayfield and Door county districts, probably a variation of two or three or four weeks.

Question: Has that date been determined for Madison and vicinity?

Professor Sanders: With fair accuracy we have it here.

Question: Would you be willing to state the limits?

Professor Sanders: It generally runs from about the 20th of July to the 5th of August for Madison. But I have not had an opportunity to work anywhere else.

Question: Will a ten per cent lime-sulphur kill the aphids in the summer time?

Professor Sanders: Not satisfactorily. Kerosene emulsion or tobacco decoctions are best for the aphids. There is no danger of injuring your trees, especially with the tobacco decoction.

Question: Is it necessary to spray as many as four times in order to catch the second brood of codling moth?

Professor Sanders: Not necessarily, if you know within a week or so what is the proper time, one spraying with arsenate of lead would be sufficient.

Question: And you spray three times?

Professor Sanders: Yes, we spray just when the petals fall and then again ten or twelve days later for the first brood, then the third spraying ought to come in time for the second brood, as it appears late in July, or up to the 5th of August.

WEDNESDAY AFTERNOON SESSION. HORTICULTURAL BUILDING, UNIVERSITY OF WISCONSIN, MADISON.

PRUNING PRINCIPLES.

PROF. J. G. MOORE, University of Wisconsin.

The principles upon which pruning is based are the forerunners of the practice of pruning, if we are to prune intelligently. Now, I realize that it is possible for a man to go out and prune a tree, or at least go through the operation that he calls pruning and which possibly we might term pruning, without knowing anything whatsoever about the principles upon which pruning is based. But I contend that if he does, he is not doing intelligent pruning.

At the very outset we must get clearly in mind the difference between the principles of pruning and the objects of pruning. We prune to get certain definite results. Whatever those definite results are would be the object, but in order to secure that object we must follow certain definite facts or rules of plant growth, or we are likely to fail in securing that object. These facts or rules are the principles upon which pruning is based.

There are two schools on the subject of pruning which hold very different ideas. I think it safe to say that the schools are at the present time quite unequally divided. We still have what we might term the old school as regards pruning, which held that little or no pruning was necessary in the orchard, on the ground, nature would take care of that proposition herself, and I regret to say that we still have some horticulturists who hold to that theory. I believe however, that the majority of horticulturists have come to recognize that if we want to produce fruit, at least a marketable kind of fruit, we cannot depend upon nature to take care of the trees, not only as regards planting and cultivation, but equally as regards pruning. So that if we are to go into orcharding from a commercial standpoint, or, for that matter, from the standpoint of the home orchard, and are to carry on the operation successfully, any rational system of culture will have to include the practice of pruning.

One of the very first principles, and I think possibly one which we might say is really as important, if not more important than any of the others, is that heavy top pruning, or to put it in other words, the removal of a relatively large amount of the top of the tree, tends towards increase of vegetative, or top growth. That is the first principle which a pruner should get in mind, for if he fails to have that in mind, he is very likely to cause more injurious results than good by his operation.

Now, in order to study this more thoroughly, we should go into the why and wherefore of this practice. Why is it that if we remove a

large part of the top of a plant, we will increase the vegetative growth? In nature, as the plant grows, there is kept a sort of equilibrium between the tops and the roots. There is a sufficient amount of nutrition under ordinary conditions to supply a given amount of top, and to produce a certain amount of wood growth. If we destroy that equilibrium between root and top, by removing a large amount of the top, we have a preponderance of the food gathering area of the tree over that portion which would naturally be consuming the food, with the result that there will be forced out vigorous new buds, possibly buds which have been latent for some time, which had not developed at the time they ought to, or the development of new buds which had not been present previously. We get the tree putting out a much more vigorous growth after the top has been removed or seriously cut back, than we would if the tree had been left in its normal condition. That brings up immediately the application of this principle in actual practice. How does this principle influence the procedure of a person who is to prune a tree? In the first place, we may resort to this method of top pruning to invigorate a tree. A tree which has been making a slow growth, possibly seeming to be deficient in its root development, possibly one which has been injured, one which has not been making a desirable top development, will be pruned rather severely. We will remove a relatively greater amount of wood than we would from a tree of the same kind which was a vigorous tree, because, getting back to our principle, the removal of a large proportion of the top will tend toward an increased vegetative production. That, then, will be the first practical application.

The next way in which this principle may affect pruning is as regards the question, How frequently shall we prune? Fruit bearing is associated with what we term in horticultural language, a quiescent state, or possibly we might say a semidormant state—although that is not a good term to use in this connection. That is, a state in the tree when there is not being produced a large amount of vegetative growth. We have come to learn in the production of fruit, that a tree does not turn its energies strongly in two directions at the same time. If it is putting lots of energy into fruit production, it is not going to produce very much wood. On the other hand, if it is putting most of its energy into the production of wood, and making a large vegetative growth, it is not going to produce very much fruit. How then does this principle of pruning affect the plant? Simply in this way,—that if you have, as many orchardists have done in the past, and as 95 per cent who have been growing orchards have done, delayed pruning this spring, because you are a little rushed with your farm work and wait until the third or fourth year, and then try to make up for lost time and take off all the wood you should have taken off during the three or four years, you will have given your tree a very heavy top pruning, and the result will be that, that tree, due to this unbalanced equilibrium between the root and the top, is going to turn its attention and energy towards an increased top growth. Now, if the statement which I have made that fruit grow-

ing is associated with the condition in which there is relatively only a small amount of top growth, then we are reducing our fruit crop, and not infrequently it does result in arresting fruit production entirely for a considerable length of time, so that the practice of annual pruning is based, for one reason at least, upon this first principle of pruning.

Any of us who are growing trees to any extent have observed that when we have removed a considerable amount of top wood, we forced cut new growth upon the larger branches, particularly around the points where we have removed comparatively large branches, possibly a couple of inches in diameter, and upon the trunk of the tree. This new growth starts where it would ordinarily not have started, arising from what we call in botany adventitious buds, which result in water sprouts or suckers. This then is another result that may be caused by heavy top pruning. Now, water sprouts or suckers on a tree that is bearing are a detriment, because as a rule they serve no valuable purpose, and serving no valuable purpose either at the time of production or later on, they are simply monopolizing or consuming an amount of food which should have gone to some other part of the tree. If then, we have pruned a bit vigorously and have brought about this production of water sprouts, we must remember that they are practically, from the standpoint of the tree, parasites and therefore should be removed as soon as possible after their production. These are the three main results of the application of the first principle of pruning.

Now what rules can we deduct from it? To sum this up briefly, Prune weak trees comparatively heavily. I do not mean by that that if you have two trees, one a weak and one a vigorous tree, that you would prune as much wood from the weak tree as from the vigorous one, but you would prune the weak tree proportionately more heavily than the vigorous tree. We also get the rule that for best pruning we should prune at least once a year. I might say that a good many of us believe that that might be extended to cover a greater portion of the year than it usually does. Then we have the third rule which I just gave, the removal of water sprouts as soon after they are produced as possible.

Passing on now from the first principle of pruning to the second, we have the principle which says that root pruning tends to reduce vegetative growth and therefore tends towards fruit production. I always hesitate somewhat about putting forth this principle, because it is so likely to be misunderstood, that is, it is quite likely to be given more real importance in orchard operations than it deserves, because root pruning, if we follow this principle without good judgment, would seem to say that if you want heavy fruit production you should go out and root prune your trees, possibly carry it a little further and say, root-prune your trees annually. But it is not always wise to take a bare statement of fact without considering other factors which might influence the fact, and so with this principle. We cannot take it in its broader sense, because if we study this subject a little more

closely we will find that when we root prune our trees we are not only disturbing the equilibrium, but we are disturbing it in the opposite direction from top pruning with the result that we now have a top which is too large for the root, and if the root pruning has been too severe we will have a top which will not be supplied with the necessary moisture, which will result in a shriveling of the tissues and possibly death. Not only that, but if we continue root pruning indefinitely from year to year it has a 'weakening effect upon the tree and we soon get our tree to a point where it is no longer able even to produce fruit, because it has been carried past the stage, even the quiescent stage where it gets enough food supply for the formation of flower or fruit buds, so that the adoption of this principle in fruit-growing is a minor one and it applies, I believe I am safe in saying, in only one case, which is, when trees for some reason—the influences might be several—refuse to go into fruit-bearing, but keep on making vegetative growth, then we may possibly root prune them and tend to cause them to produce fruit.

The third principle has to do with the season of pruning, and may be stated something like this: Winter pruning, or, to make that a little more inclusive, pruning during the dormant period of the plant, tends toward increased vegetable growth, or tends towards a heavy top growth, and summer pruning tends towards fruit production. Now here again our principle, if taken too literally, may lead us into difficulties. As fruit production is what we are after, we might think that if summer pruning brings that result we may be justified in pruning our trees in the summer and only in the summer, but here again we have to consider the counter proposition that in summer pruning we are removing from the tree parts which have been produced through the activities of other parts of the tree and which have as yet not paid their board bill. That is, these parts have been produced at the expense of other parts and they have not in turn served their purpose. What is the result then, if we carry on summer pruning continuously and indiscriminately? The same as if we cut off the roots indiscriminately. We have reduced the food supply and we have impaired the vigor of our tree. And if carried on indefinitely, it will mean reduced production, just the same as if we reduced the roots, because you remember, that while we ordinarily think of a tree gathering its food through its root system, the facts are that a tree gathers at least ninety per cent of its food making up its dry weight, not through its roots, but through its leaves, and if we remove those leaves before they have gathered this food there has been just that much drain upon the plant. It is because of this fact that our practice in horticulture, so far as fruit growing is concerned, in relation to the season of pruning, has confined that pruning very largely to the dormant period.

The next principle of pruning which will demand our attention is a statement of fact which probably you all know, that is, that pruning is or may be a fruit-thinning process. The reason I give this principle is because it makes certain demands upon the pruner. It de-

mands that he know more than the bare principle, that pruning is a thinning process. It demands that he know something about the plant which he is pruning as regards its method of flower and fruit production. If we go into the orchard or the vineyard and attempt to prune our plants without having first studied the methods of flower production which result in fruit, we are quite likely to carry the thinning process beyond the point where we will get proper crops. Very frequently we find a man starting out to prune his apple trees or pear trees who has not made a study of this, or has given it little attention, and because he finds a lot of crooked, unsightly twigs on the larger branches of his trees, he thinks the trees will look very much better if he cuts those all off and every one he cuts off means a portion of his crop, because he is removing fruit spurs, and, when he goes into his American plum orchard and cuts back all of the last year's growth, he is reducing his fruit crop, because he has not learned that on the American plum, near the base of the past season's growth are produced flower buds. He must therefore, if he is to prune intelligently, inform himself on the method of flower production of each of the particular fruits that he is going to prune. He will not prune the grape as he would prune the apple, in the same proportion or in the same manner. He will not prune the raspberry or the gooseberry as he would the grape, and so on. This principle therefore means that if you are to prune intelligently the various kinds of fruit, you must inform yourselves of the method of flower production.

The next principle is that of heading in, by which we mean the heading back of the past season's growth, which has a tendency to thicken and broaden the top of the tree. Those of you who have studied the development of twigs know that along the sides of a branch produced during a given season, are produced buds. If in pruning we leave that branch exactly as it is, without removing any of the branch, we can expect that the following season we will get a long most vigorous growth from the end or terminal bud, and we will get from the top two or three or four buds, depending upon the number of the shoots and the vigor of the tree, comparatively vigorous shoots, and from the buds near the base we will get nothing, or very little. If however, we cut back that growth, which we call heading in or shortening in as it is sometimes termed, we continue the growth which would take place at the tip of the branch down here, nearer the base. (Illustrating).

If we leave all the shoots and cut them back the same, we will get a tree which is so dense that the probability of sunlight getting into the center of the tree is very remote. We will therefore need to reduce the number of shoots. This is important from the standpoint of the color of the fruit, and of prevalence of disease and is influenced largely by the particular kind of fruit and the section in which you are growing it.

Take another principle of pruning. Some of us have come to think possibly that by pruning we can change the habit of the plant. If a

tree naturally has an upright growing habit, as, for instance, taking an extreme type, the Whitney crab, which you all know grows more like a pear than it does like an apple, the branches are as nearly vertical as possible. It does not matter how much we prune that tree, or how we prune it, we will never induce it to change the way it produces its branches, but we can by pruning properly correct this defect and throw the growth, outward, instead of letting it go directly up, or very nearly so, and thus make the top spread out more. We can overcome then to some extent such a defect by pruning, even if we do not change the habit of the plant. We can do this much more successfully with trees which have an upright growing habit than we can with trees which have a growing habit which is more nearly horizontal. With a type of tree such as Talman Sweet or Longfield, we cannot correct the defects to the same extent as with the upright growers. But we must take into consideration in pruning that we can, to some extent at least, overcome the defects in the habit of growth of the tree.

These are the more important principles of pruning. There are some others, but I have already exceeded my time, but I want to say in conclusion that the best pruning is that pruning which results from a definite object, is done after a careful study of the conditions, the climatic conditions in which the tree is growing, and also a study of the peculiarities of the kind of plant we are pruning, apple or plum or pear or what, and also the peculiarity of the particular variety. For we cannot prune all varieties of apples, or should not prune all varieties of apples in exactly the same way. Now, if there are any questions, I shall be glad to answer them. I realize, as I said at the beginning, that I have not given you any definite ways of pruning.

DISCUSSION.

Question: When a tree, either by accident or influence of the wind, leans especially to one side, is it possible by pruning on the side where the growth is defective to induce it to grow more on that side?

Professor Moore: It will have a tendency to do so, that is, if you prune quite heavily there. Of course you have the factor of increased growth getting the additional effect of the wind. In that case, the thing we should do to overcome the effect of the wind is to lean our trees, in planting, into the prevailing winds. I saw just across the line at Menominee, in the orchard of Mr. Nelson, a few years ago, young trees that were planted, possibly not quite at the angle which I have made there, but very nearly. While I had learned at school that when you had such a condition, you should slant your tree, I had never realized that you should slant them anything like Mr. Nelson slanted them. I found out very soon that it was all right, because we drove down the road less than a quarter of a mile where

he had an orchard in bearing, and I saw the results of such planting. His trees, although set at a considerable angle, had after being set possibly fifteen years been curved by the force of the wind, so that the majority of the heads were beyond the center of the trunk.

Question: Is there any advantage in trying to hold them in that way, if they have once become turned in that way?

Professor Moore: I think you can do comparatively little; that is, if your tree is vertical and that growth should run over, you can have a slight tendency to influence it if you prune the branches. Suppose the wind is in this direction (illustrating). We always figure on pruning so that the top bud is out, which will have a tendency to throw this growth more at that angle, more nearly horizontal, with the result that when it does get back up, it will probably not go quite so nearly in line with the trunk.

Mr. Richardson: How will you apply that principle in the tendency of the tree to grow to the northeast?

Professor Moore: The probability there is that the tendency to grow in that direction is largely due to the wind. That is, the tendency of your tree to grow to the northeast is due to the effect of the prevailing wind, you should overcome that by slanting your trees into the southwest.

Question: When do you root prune?

Professor Moore: I want to emphasize at this point, seeing that this question has come up, that we do not advocate root pruning to any extent. It is a special practice and we believe, as a rule, a special practice is likely to result, if followed out indiscriminately, in a detriment rather than a benefit. But if you root prune, root prune in the spring; then you will get your effects, not that season, but the season following. I am speaking now of tree fruits.

Mr. Moyle: Why is it that some varieties of apples in orchards will be full of water sprouts and other trees of other varieties have none, all growing in the same manner?

Professor Moore: For the same reason that your tree has different characteristics in other respects; it is the individuality of different varieties. Even if all other conditions are similar, we know that with two varieties pruned practically the same, one may produce more water sprouts than the other. One produces adventitious buds more readily, or it may be, you have latent buds there which are forced into growth.

Question: With this system of cutting off the top of the tree in order to get a new growth, you could not naturally expect fruit for some time.

Professor Moore: If you cut off all the top, you would not be likely to, because of the increase in wood production. You would have to form a new head to a point where you would get flower bud production.

Question: Have you had any experience in cutting off large limbs in January and December, and what success have you met with?

Professor Moore: I have not, because in the first place I do not

believe in removing large limbs at that time of year, and my reason for it is this. Yes, I heard somebody say "Nor any other time." I will qualify that, however. The reason why we advocate pruning, particularly if we are going to take off limbs of any considerable size, in the spring is this: Supposing we have here a branch from which we are removing another branch. I make that cut in the most approved fashion, whatever that is, I take that off in the fall. Now, the only part of the exposed area between those two points which can produce new growth to heal that wound is a very small layer of cells which lies just between the bark and the wood, which we call the cambium layer. Those cells are in heavy growth during the same period of the year that your tree is making a heavy growth, and if we cut that branch off in the fall or winter, that wound has to stand there in that condition until spring, because there is no growth taking place. If that stands there then during the winter months, with our dry atmospheric conditions and high winds, even though we protect it somewhat, and with the freezing which we always get, you run the possibility of getting this cambium layer, which is exposed and in best condition to lose its moisture, killed back beyond the original wound. You also run the chance of checking this tissue here, because it is not being healed up, and because it is given the most adverse conditions. So for those reasons I do not believe in the practice of removing large branches, if they have to be removed, in the fall of the year. Neither would I let it go too late into the spring, but I would prefer to leave it go a little later in the spring than to do it in the fall.

Question: Why have any branches removed?

Professor Moore: Because we do not practice right pruning at the start. In the average case, with a tree properly pruned during its early development up to the time it bears fruit, there will be no necessity to remove large branches. That is a matter outside the principles of pruning.

SOME PROBLEMS IN ORCHARD PATHOLOGY.

PROF. L. R. JONES.

I am glad of the opportunity to join in extending greetings to you and also in saying a few things about the relation of the work in the department of plant pathology to the interest of your Society. I have on previous occasions gone into certain details regarding the work that we have done or are doing. It seems to me it would be better this afternoon to say just a few things regarding some things that we hope to do. Speaking for your Society, I realize that your chief interests are with the orchard and orchard fruits. We have during the last three years given some rather critical observations to the diseases of orchard fruits, but we have not been able to take up a good careful experimental study or investigation of any of them save the one, the rust disease, upon which we have before reported to you. You will recall that that is the disease which is especially prevalent in certain sections of the Wisconsin river valley and Mississippi river valley, characterized by the development of rusty spots upon the leaves, causing their early death and fall. As I have explained before, this rust comes originally from the fungous infection on red cedars, or red junipers (*Juniperus Virginiana*) and passes from the cedar to the apple. As has been known to your president and some of the others who have had trouble with it, the ideal way to get rid of it is to cut out the cedars, but in certain sections of the State where these are common as native trees, it is not always practicable to do this. Hence our experiments aimed to decide whether the rust could be controlled by spraying. These have shown that possibly it can be reduced by spraying, perhaps if care enough is taken it can be reduced to a practical degree, but it cannot be eliminated by spraying. In any case, the wise thing to do is to avoid bringing the red juniper into proximity with the orchard if you can do so, or if you cannot, then to realize that there are certain varieties, especially the Wealthy, which are subject to the disease. This is simply repeating testimony that I have given once before to you as to the field studies we made in the orchards of Mr. Palmer and others upon this disease.

Now, as to other diseases,—there are troubles more generally important over the State than rust, because there are only a few sections of the State where the cedar is common. Those other troubles are of three main types. (1) There is the scab of the apple, the most widespread serious trouble on leaves and fruit in apple orchards; (2) there is the shot hole fungus, a serious leaf disease in cherry and plum orchards; and (3) there is the obscure class of troubles with trunk and branches termed canker and blight, which are due to various causes. Mr. Keitt, whom you met last year, has returned from his work upon orchard diseases with the Government and is to give all his attention to this department from now on. It is planned that he



Light gang plow used for first cultivation in cherry orchards at Sturgeon Bay.



"Light Draft" harrow used in Sturgeon Bay Cherry Orchards.

give his chief attention to careful studies of these troubles in orchard and laboratory.

But do not expect too much. We cannot attempt to work out all of these things fundamentally at one time. While we shall aim to work in coöperation with the horticulturist with remedial treatments from the outset, the point I wish to emphasize is that with each of these diseases in turn certain fundamental points as to cause need critical intensive study.

The apple scab is better understood than the others, but it is still a question as to how the scab fungus lives over the winter and starts again in the spring. Six or eight years ago we thought we knew all about this. Then a new and important fact was learned, namely that the apple scab lives through the winter upon the dead leaves under the trees; then spores are produced on those in the early spring, a type of spore different from that produced on the living fruit and leaves in the summer, and probably more virulent, which reinfects the trees. Having learned this, it was again supposed we knew all about the matter and could safely modify our spraying operations to meet these new facts. But now comes new and disturbing evidence from Maine and New York. This is to the effect, that in addition to the overwintering scab fungus on the leaves, they find it living over on the twigs of certain varieties of trees. If this is found to be the case in Wisconsin also, then it may be that we need to return to the use of the dormant sprays which under the other teaching we were inclined to believe of less value. In this way the apple scab question has been opened up again, so that at the national meeting of the plant pathologists last month there was more discussion of these matters than at any time for several years. Some further study needs, therefore, to be given to the apple scab question in Wisconsin.

Another matter where more attention is needed, concerns the health of the cherry and plum orchards. The shot hole disease is the worst trouble here. Up to about two years ago it was thought we knew all about the way this fungus overwinters. It was supposed that it developed only the one kind of spore and was distributed by that. But investigations within the last two years in the eastern states have shown that, here again, another kind of spore is produced on the dead leaf tissues upon the ground in early spring. This indicates that it may be necessary so to modify the spraying operations as to prevent this early spring infection. As showing the immediate practical significance of this, those of you who are acquainted with the conditions at Sturgeon Bay know that the results of spraying last spring and summer were not the same as they had been the preceding years. The success of last season's spraying apparently depended more upon one application at a critical time in early spring than upon later applications, whereas in previous years the chief benefit came from later applications. The explanation may be that under the conditions of last spring there was an exceptional amount of infection from the early spring spores, developing upon the dead leaves on the ground. Now, as to whether that is the fact or not, remains to be learned, but

we hope now with the coöperation of the horticultural department and the Sturgeon Bay orchardists to get further light on the matter. It is extremely important practically, that we learn how all these pests pass the winter, because it may be that some little modification of the treatment in the early spring may make more difference than we at present realize in their control. It is quite possible that with the shot hole fungus, as with the brown rot of the plum, sanitation looking toward the destruction of the dead leaves may be important.

Now as to that third group. I have talked to you about certain practical aspects of the the canker and blight questions before. In this connection to-day I wish to emphasize that there are more things that we do not know about the causes of canker of fruit trees in Wisconsin to-day than there are that we do positively know. We know in a general way that fire blight is capable of running down the stem of apple trees and causing canker, but we do not know that the general type of crotch canker in Wisconsin is caused by fire blight. Nor indeed has it been demonstrated to be caused by fire blight in any case known to me. I do not say that it may not be so started in some cases; I simply say that we do not know. Investigation is needed. Another type of canker called crown rot occurs at the base of fruit trees. Even in the east where fruit trees have been grown and watched a century and more the experts are not agreed as to the cause of this type of trouble. In some cases it has been attributed to climatic injury, in others to the fire blight bacteria. What does this mean? Is one expert right, the other wholly wrong? Not necessarily. If the tissues are killed at the base or in a crotch in a tree it causes what is called a canker spot. In the end one canker spot may look like another, but the cause of killing in one case may be entirely different from that of the other. What we need here in Wisconsin is to find the cause of the cankers as they occur in our fruit trees. There is also the more familiar "sun scald" type of canker upon limbs and trunks. There can be no doubt that climatic conditions play an important part in these various cankers in Wisconsin, or that, following those climatic injuries, fungus and bacteria may get in and increase injuries. The bacterial or fungous parasites may also work quite independently. Here again patient, skillful investigation is needed, for the understanding of the causes must guide remedial measures.

Some two years ago complaints began to come to us about the so-called "leaf curl" trouble with cherries. Opportunity came this last summer to go over some affected orchards quite carefully examining roots as well as tops. The trouble shows as a general debility of the tree. The tree stops growth, so that in some instances trees that have been showing this trouble for two or three years have made very little growth during that time, although remaining alive, while neighboring trees have doubled in size. Meanwhile the affected trees have shown each year a progressive paling and upcurling of the leaves, with premature defoliation. In bad cases the tree weakens more rapidly and dies out after a year or two. These examinations indicated that the trouble was primarily due to root injury which had

resulted from severe winter freezes some three years ago. It has been claimed elsewhere that there was evidence of subsequent fungus invasion supplementing this climatic injury, but upon this point we have no evidence as yet. The whole question of climatic injury to fruit trees is one of the most involved with which the orchardist and pathologist have to deal, and I trust that you will not be impatient if when you call upon us for reports in some succeeding years, we repeat what we have said to-day, that there are many things about the diseases of our orchard trees which we do not understand. All we can do is to assure you that these investigations are to be prosecuted more earnestly in the next year than has been possible in the past and on the other hand, to invite and urge your coöperation in their advancement.

PUMPING WATER INTO STRAWBERRIES.

N. A. RASMUSSEN, Oshkosh.

The more water we can get into strawberries the better the fruit, so why not use the pump as water in the berries may bring us 15c per quart?

We are surrounded by water above, below and on all sides. Of that above we have no control but all the rest is at our disposal, surely there can be no reason why we should not make use of it. It costs about \$25.00 per acre to irrigate, more or less, according to the season, while it costs several times that sum to cultivate and prepare for market, which sum might be almost entirely lost for the want of water.

I have tried both ways, running water on the ground, also sprinkling; but I prefer the latter method, so I shall tell you about that.

We pump the water with gasoline engine, into a tank elevated 18 feet. We run from the tank an inch and a half pipe to nearest corner of the berry patch, then also across the end. From there we run inch pipes about 60 feet apart down between the rows, placing a hose bib on every third length of pipe; then use common garden hose and sprinklers. Four lengths of hose 50 ft. each and four sprinklers will take care of an acre, watering half the patch each day; which should be the half just picked as the vines are sure to droop from the handling and a little sprinkling of water freshens the leaves and shades the fruit again.

Last year people said we had plenty of rain in our section and I should have been of the same opinion but experiment proved to me we had only about half enough. Strawberry plants want rain almost every day through the picking season, at least they will stand it and improve the fruit if they get it.

We also found that sprinkling entirely controls leaf rollers as they cannot work unless given at least 48 hours of dry weather and we give them only half that time.

Then again when the picking season is over the soil is in perfect condition for plowing and preparing for a second crop which without irrigation is oftentimes impossible.

We never use a strawberry plat more than one year. Pick one year, plow it up, plant anew again. I am not going to go any further, but I will answer questions.

DISCUSSION.

Question: Do I understand you that sprinkling the water onto the vines had a better effect than merely running along the ground?

Mr. Rasmussen: A great deal. The plants need the wetting at the roots, but the leaves need it. It is the same as a bath to us after a hot day, it revives the plants, it means a cool drink and a bath to the plants.

Question: What is the cost of irrigating a three-acre field?

Mr. Rasmussen: It depends on how far you have to lift the water, and how far from your berry patch the well is; but about \$300 ought to equip you in fairly good shape, if you have not too much up-hill to travel. If I did have to travel up-hill, I would still have my tank on the high place and run the pipe to the tank, and then sprinkle from the tank.

Question: Do you pump with a gasoline engine or motor?

Mr. Rasmussen: Gasoline engine on deep well pump.

Mr. Richardson: How large a plant will you need in a three-acre patch, what horse power engine?

Mr. Rasmussen: I like about $2\frac{1}{2}$ horse power engine; while it is not necessary, I think it is economical to have the large engine. The tank depends a great deal on your well. If you can keep pumping all the time and your pump is large enough, you do not need a very large tank, and I would just as soon, and I do not know but what I prefer, the water direct from the well, the colder the better.

Mr. M. S. Kellogg: Did you keep any check rows in your plantation, to know the increase that you derived from the irrigating?

Mr. Rasmussen: Yes and no. I left one corner that was a little hard to get at, and I did not think it would pay to water it, and I do not think that I got any more than one-half the returns from that land that I cut off, that is, half the amount of fruit, and not anywhere near the price for the fruit. And another thing I will state, on that corner the leaf roller worked a great deal, while on the other patch there was not evidence of any leaf roller whatever, at least they did no harm. I do not think the leaf roller can work unless he has at least 48 hours of dry weather, and we aim not to give them that. I think that is why the leaf roller did not work.

Question: How soon do you start to water, as soon as you set the plants?

Mr. Rasmussen: No, I did not this year, because we had plenty of rain. They do not need the abundance of water until the berry has

reached almost the stage where it begins to turn white, where it increases in size very rapidly, the last 48 hours I think is when it needs the water. However, if they began to show any signs of drouth, I would water earlier.

Question: Did you find any scalding from the sun?

Mr. Rasmussen: Not as much as where we did not water.

A member: My experience is that where they were watered with the fountain they were soft and they spotted in the sun and we were unable to market them.

Mr. Rasmussen: We do not set the sprinkler and leave it a whole day in a place. It will take us 24 hours to go over half the field, and it would give them about an hour and a half to two hours for the sprinkler in a place, and then we would move it. One man could attend nicely to ten acres. I think the Dunlap responded more to water than any other plant, unless it be the Bubach, although the Warfield was increased as much, but we got the choicest fruit from the Dunlap, and they did not seem to blight, which was the case in other years.

Mr. Richardson: I take it you would not advocate varieties like Haverland and Bederwood for irrigation?

Mr. Rasmussen: I had some berries in the Bederwood that sun-scalded.

Question: Do you have a mulch on your berries?

Mr. Rasmussen: Yes, we mulch very heavily with marsh hay.

Question: Did you have a great deal of rain this summer?

Mr. Rasmussen: There were times when it was raining while we were watering.

Question: You think it is beneficial to sprinkle the berries when you have water otherwise?

Mr. Rasmussen: Well, we might have rain enough, but we did not have; this year we thought that we could stand more water.

Question: The idea is to dampen the leaves, it is not done just to dampen the berries?

Mr. Rasmussen: Well that depends; if the land is wet enough, then all I intend to do is to water the foilage.

Mr. Richardson: What distance apart do you put your plants?

Mr. Rasmussen: We plant about $4\frac{1}{2}$ feet, setting our plants 18 to 24 inches in the row, always getting too many plants in the row.

Mr. Richardson: Don't you find your row awful wide for your picker?

Mr. Rasmussen: No, not if your path is wide enough.

Mr. Richardson: You put two pickers on a row?

Mr. Rasmussen: Always, and you need to keep them picking close together all the time.

Mr. Richardson: Don't each picker pick on each side of the alley?

Mr. Rasmussen: No, sir, one side. If you let them pick on both sides, they are apt to skip six inches or a foot. They cannot work any faster by changing back and forth.

Question: Do you think it would be possible to perforate the iron pipe so as to sprinkle the whole row?

Mr. Rasmussen: That would be the Skinner system which is now in use in a great many places. I suppose it is far ahead of what I am using, but it is quite expensive and the other has filled the bill.

Question: Did you ever try to use rock phosphate where you have old soil?

Mr. Rasmussen: I have had it on the strawberry patch for two years. I have not used it so that I could give positive proof, because it was all over the patch, but I think I can see good results.

Question: How long did you leave your soil lie before putting it back into strawberries again?

Mr. Rasmussen: The longer the better. I would like it six or seven years, if I have land enough to work on.

Question: It seems to me you cannot raise good strawberries after one crop.

Mr. Rasmussen: No, I don't think you can.

Question: Where you change your bed, don't you have considerable trouble and expense to move this watering system?

Mr. Rasmussen: No, I don't leave it anywhere. Two men will change it from one to another patch in an hour or two hour's time, taking long lengths and shifting them. We take it from the strawberries to the raspberries. We found we could grow raspberries by continuous cultivation until the fruit ripens, then we take the strawberry piping and put into the raspberry, gooseberry and currant patches.

Mr. Kellogg: Have you ever experimented with ascertaining if continued watering of the ground would have a tendency to cause that soil to be acid and need lime to correct it?

Mr. Rasmussen: I am afraid I am going to find that to be the case.

Mr. Kellogg: Is the water that you use hard water?

Mr. Rasmussen: Yes.

Mr. Kellogg: Has it quite a proportion of lime?

Mr. Rasmussen: It has a great deal of lime in it. Whether that will have an effect or not I do not know.

Question: Did I understand you to say that you thought very cold water was better?

Mr. Rasmussen: Yes, I think so. It cools off the plants that are hot, just the same as a cold drink does a man.

Question: Did you ever see any bad effect from sprinkling while the sun was shining?

Mr. Rasmussen: No, sir, we have sprinkled on the very hottest day and did not see any bad effect.

Question: You put your water in the tank first?

Mr. Rasmussen: Yes.

Question: If it is left there it gets warm in hot weather, I suppose?

Mr. Rasmussen: Yes, but when the watering is continuous, day and night, it does not have much time to warm up. Berry pickers go in the field and drink anywhere, always say it is cool. It is a big benefit to the berry pickers, they do not have to chase to the house for a drink of water, they can get it anywhere in the patch.

Mr. Toole: How soon after the sprinkling do you do your picking? You do not want to pick right after a rain, and I presume you do not want to pick immediately after a sprinkling?

Mr. Rasmussen: We intend to give the vines time enough to dry off. As a rule it will stand over night, because if the pickers are through we switch them onto another patch. We want to follow the pickers as closely as we can. The minute they have handled the vines, get the water on, so it is as a rule 10 or 12 hours before they get back to where we have been watering after the picking.

Question: Did you say you pick only one year?

Mr. Rasmussen: One year, then plow them up, a new patch every year.

Question: When do you set your plants?

Mr. Rasmussen: We set our plants early in the spring, and pick them the following year. But there is another thing to consider in our market gardening, we plan on getting a second crop of vegetables, celery, onions, carrots, peas, after our strawberry crop. If we had lots of farm land, or if it was not worth any more than \$6 or \$10 an acre, as farm land is here, perhaps we would leave a patch the second year, but we are crowded for land, and do not think it best, because the fruit is not as good the second year as it is the first. In all cases that probably would not hold good.

A member: It practically takes two seasons to get one crop.

Mr. Rasmussen: Yes, it is the second season we get the crop. We still get two crops, almost three. In the first year we grow spinach, radish and such crops in the new patch, so we get crops both years besides the strawberries.

Question: What do you call an average yield?

Mr. Rasmussen: Oh, I have not any figures, but I say when we get strawberry growing where we ought to get it, we should not get below \$500, when we get to growing as we ought to, and then we should crowd up to \$1,000 for an annual, usual good crop.

Mr. Barnes: What is the average price per 16-quart crate?

Mr. Rasmussen: I should think they would average \$2, a little better last year for the irrigated fruit.

The president: Do you sell them all in the local market?

Mr. Rasmussen: Very largely in the local market, but the irrigated fruit brought 25 cents more than where they were not watered.

Question: What is your land?

Mr. Rasmussen: It is very light clay, sandy texture, clay subsoil, most of it; some of it black loam.

Question: Do you irrigate your new set plants?

Mr. Rasmussen: We never have as yet; never found it necessary.

Question: What is your preparation of the ground for strawberry setting?

Mr. Rasmussen: Manure heavily, plow deeply.

Question: In the fall before?

Mr. Rasmussen: Why, I don't care for the time part, whether it is spring or fall plowing, never have seen any difference. I prefer

spring plowing, it is easier done, when the horses go on there it is compact enough.

Question: How do you plow your fertilizer, plow it down?

Mr. Rasmussen: Plow it under. We as a rule have a man there with a fork so as to shove it into the furrows so we can get it covered well.

Mr. Barnes: Do you think you could water on the solid clay sub-soil? Would it not get baked hard?

Mr. Rasmussen: No, I would water it enough so it would not bake through the picking season, that is what I expect to do, have it heavily mulched. If the land would bake hard and you could not prevent it from baking, I do not think it would do any good to plant strawberries. I can on our land run the water between the rows and get fairly good results, but I like the sprinkling better.

WINTER VEGETABLE GROWING FOR SMALL TOWN TRADE.

W. A. TOOLE, JR., Baraboo.

Winter vegetable growing in greenhouses is an industry of considerable importance near the larger cities where there is a regular established trade for such products. The villages and smaller cities seem to depend largely on the wholesale markets of the larger centers for their supplies in this line where any demand exists.

There is an opportunity here for the market gardener or florist to grow a certain amount of these vegetables at a profit. To the market gardener especially it would seem worth while to look into this business. A greenhouse would be of the greatest assistance in the spring in starting all kinds of young plants, and it is more convenient and certain than hotbeds. It is hardly economy to invest a considerable sum in a greenhouse, heating plant, and general equipment just for the convenience and profit of its use in the spring. Some crop must be grown at a profit during the fall and winter months to make the venture pay. Carnations or other cut flowers would not do as they would have to be cleaned out of the way too early in the spring before they had returned a fair profit on the labor spent on them during their non-productive period.

Some of the winter vegetables fit in very nicely. Chief of these is lettuce. Some ten or eleven years ago, just previous to the time when our present Secretary, Mr. Craneheld, was elected to that office, he was one of the instructors in the Horticulture Department of the University. While working under his direction I became interested in lettuce forcing. We had greenhouses at home largely used for the growing of pansy plants and bedding plants for the spring trade. This left considerable bench space idle during the fore part of the winter, although a fire had to be kept up because of stock plants and young geranium and on other small plants that only occupied a part

of the room. The lettuce growing seemed to offer a chance of utilizing this waste space at a profit. Grand Rapids lettuce, a loose leaf, light yellowish green variety is grown most generally in the West and that is what we grew as it is much easier to force and sells better than head lettuce. Our natural garden soil is a heavy clay, much too heavy for lettuce. For the lettuce we have sometimes made a compost of sod and manure, but usually we have prepared the soil by mixing well rotted cow manure, rich garden soil and sand in the proportions of two parts manure, two parts soil and one part sand. This might be varied considerably in other localities where the soil differs. The object is to prepare a light and loose yet very rich soil. Ours are raised benches that will hold about five to six inches of soil. The soil is put in even with the tops of the benches and is made smooth and level but is not packed down as would be the case for most kinds of plants. The seed is sown usually in flats or sometimes in a specially prepared section of the bench. It may be planted either in rows or broadcasted. The soil in which the seed is planted should be very sandy and may be rich but should not have much of any manure mixed with it. When the seedlings show their first or second character leaf they may be transplanted into flats, placing them about an inch and a half apart each way. If there is room they may be transplanted directly to their permanent quarters in the bench. They are easier to care for when small if planted in flats, and there is considerable economy in room if the benches may be occupied with profit for some other purpose until the young lettuce plants need moving. When the young plants begin to crowd in the flats they can be transferred to their permanent quarters. We have found that about five inches apart each way is the best distance to plant the lettuce in the benches. Take up a plant with the left hand and scoop a hole in the soil with the first two fingers of the right hand. This is quicker and handier than using a trowel or dibble to make the hole. Place the roots in the hole thus made, push the dirt back around—but only press the soil lightly against the roots, not firmly as with most plants. When a bench or section is planted, water thoroughly.

The plants will need but comparatively little labor until ready to market. They will probably not need water oftener than once a week, but should receive a thorough wetting when they do need it.

The greatest trouble will be from lice or green fly. The plants should be fumigated regularly twice a week with a tobacco extract, to prevent the lice ever getting a start. If the insects once get a strong foothold they will make a large part of the crop unsalable. When the plants have grown enough to cover the ground it is almost impossible to kill the lice if they are strongly established as the leaves protect the lice from even vapor or smoke.

A night temperature of 45 degrees seems to suit leaf lettuce and it will stand 48 degrees if you want to push along the crop, although the leaves will not have as much substance when grown at the higher temperature. The day temperature may run considerably higher, especially if it is sunny.

We start to market the lettuce when a single plant weighs two ounces. Sometimes we market it smaller than this if the room is needed for other plants or if it is necessary to keep up a succession at the stores. In that case we fasten two or three plants together by running a tooth pick through the stems. The very young plants do not keep as well in the stores as those that are older. Plunging the bunches into cold water for an instant before packing them has seemed sometimes to make them keep fresh longer. For marketing we have found the most convenient way for local trade is to pack a dozen bunches in a $\frac{1}{2}$ bushel diamond market basket.

If the local grocery stores have not been used to handling lettuce it may be necessary to push the marketing for awhile until a demand is established. As soon as people realize the superiority of fresh lettuce they will not buy the shipped in stuff. At first we advertised in the display columns of one of the local daily papers something as follows:

TOOLE'S TENDER LETTUCE

FRESH AND CRISP

SUPPLIED REGULARLY TO THE FOLLOWING STORES

And here followed the names of the three stores we supplied. We received forty-five cents per dozen for the lettuce and the grocers retailed it at five cents per bunch. We replaced any that remained unsold.

The demand for lettuce is good during the holiday season, poor during the first part of January but gets better constantly as spring approaches. A peculiar feature we noticed about the sale of lettuce was that it sells fast on bright sunny or warm days but there is very little demand on cold or stormy days. It takes from three to four months to raise lettuce to marketable size in the winter. By sowing the seed for the first crop in August and having the plants for a second crop grown large enough to go out of the flats into the bench as soon as the first crop is cut, two crops may be taken off before a large part of the space will be needed for the young vegetable or other plants for the outdoor garden.

We have tried growing radishes to a small extent but without so much success as with lettuce. If they are not grown rightly the soil becomes soggy and sour or the roots do not thicken as they should. There is a good demand for them if they can be grown successfully.

One year when onions were cheap we tried forcing a few of these. Moderate sized onions were placed closely together in flats and forced along. Others were planted in the bench. The resulting green onions were rather thin but they sold very readily at ten cents per bunch of about ten green onions. I never figured closely to see if they were a paying proposition. I hardly think they would pay except when onions are very cheap.

Tomatoes and cucumbers are forced a great deal for the big cities, especially eastward, but I do not think they would pay to grow for a small town trade as they require high temperatures and special care and it is almost certain that a profitable price could not be realized for them in smaller towns, and the demand would be limited.

Pieplant is very easily forced and it may be sold at a profitable figure though not as high a price may be realized as in larger cities. Pieplant or rhubarb forces well under the bench of the greenhouse. Indeed it is quite essential that it be grown in a dark or nearly dark place. If grown in the light the leaves will be large with very little stalk and the color will not be so attractive. If grown where little or no light strikes it there will be almost no leaf and the stalk will be of the most attractive delicate pink color. Generally the best results will be secured by using plants about two years old from seed or grown a year from divisions. The roots should be dug late in the fall and piled up on some boards or on some litter where they may be easily pried loose after having frozen solid. Cover lightly with straw to keep the fleshy roots from drying too much. Here they should remain until they have frozen thoroughly. After this they may be taken into the greenhouse from time to time as may be needed to provide a succession. It may be necessary to scoop out the soil a little where the roots are to be placed under the benches as they should have about two feet of space between the crowns and the bottom of the bench to grow in. Pack the roots together closely and work soil or sand among and over the roots. Sand works easier if it is available and is just as good as soil as all of the growth is made from water and the food stored up in the thick roots. Board up the sides of the bench or hang curtains of cloth or paper to keep out the light. Keep the roots well supplied with water and the crowns will soon break and send up stalks. The rapidity of growth depends both on the heat and the time of year. Those brought in first will not force so fast as those that have been left out longer. The higher the temperature, the quicker the growth. Too high temperature induces a weak growth and less pounds of stalks. When the stalks appear to have reached their full size, remove carefully down next to the bud. Trim the stalks and wipe off dirt with a damp cloth but do not rub hard as it injures the delicate appearance. To sell readily in quantity to a small town trade it cannot retail much over ten cents a pound. The grower should receive eight cents. The stores will probably want more margin for profit but they will come around to your prices if you stick to it. Perfectly fresh vegetables make a good drawing card for other trade, and this fact should be forced on the store keepers' attention when making a bargain.

Asparagus is forced also but I have never tried it myself. It is doubtful if it would pay in a small town. Large old roots should be used in forcing asparagus.

These experiences may not fully coincide with practices in large establishments where vegetables are a speciality but they are offered as of possible value to the market gardener or florist growing for small town trade.

SOMETHING NEW AND SOMETHING OLD.

H. B. BLACKMAN, Richland Center.

I have long ago come to the conclusion that the great secret of growing strawberries profitably, and the one most difficult to discover, is to find out the varieties which are best suited to the particular soil in which they are to be grown. Not only has this been my own experience, but I have noticed in studying the reports of different growers and of experiment stations, that while one variety may do exceedingly well in one place, it will prove almost, if not altogether worthless in another. The strawberry differs, not only in productiveness and vigor, but it seems to vary also in firmness, size, color, and ripening periods. While this may be partly due to weather conditions, still I think that the soil in which they are planted has a great deal more to do with these variations; for I often note that one variety will be reported firm in one locality and soft in another. Frequently we see a certain variety doing extra well in some one place and fail to find it favorably mentioned anywhere else. These variations occur, not only in the new and untried kinds, but even in the old standard sorts, although to a less extent.

In the selection of varieties it is useless to go by descriptions given in nursery and plant catalogues, as a variety may do exceedingly well on the particular spot where it originated and yet may be utterly worthless nearly everywhere else. A great many new varieties when first introduced do extra well the first few years, then they seem to develop weaknesses and prove unreliable for general planting. I remember the first two years that I grew the Cardinal strawberry when it was first introduced. I do not think that I ever grew a variety that was more productive. Its color, size, shape and firmness were nearly perfect. In healthy vigorous plant growth it had few rivals. As compared with other popular varieties at that time or since, it was far superior to any of them. After these two years that I grew it with such success, the third year it turned out to be a complete failure. I have tried to grow it a number of times since, and it has been a disappointment every time. The Clide, Challenge, and others whose names I fail to remember turned out a good deal like the Cardinal. I would not claim that the failure of the varieties was caused by weather conditions, location, or the soil in which they were planted, because I am sure such is not the case in these varieties; but I do believe there were certain weaknesses back in the original plants where these particular varieties sprung from, and as they never became permanently fixed in their habit, they soon reverted back to some of these weaknesses.

I would not presume to name the best variety, as it is positively something that every man must find out for himself. The safe plan would be to select varieties that seem to succeed in nearly all locali-

ties. I would also choose a few of the most promising new varieties for trial. In my selection of varieties, I would never trust to any one or two varieties of strawberries—as someone has said—not even if I could get plants of the kind that grew in the garden of Eden. My reason for this is that while one or two varieties may be ruined by a freeze, the chances are that with five or six different kinds that there will be two or more varieties that will come through uninjured. This has been my experience in the past, and I believe it will hold good in the future.

Almost any soil that will grow a good crop of corn or potatoes will be found suitable for strawberries. Land that would produce one hundred bushels of corn to the acre would be much more preferable than land that would grow only fifty, for it will never pay to try to grow berries on poor land. My advice would be not to select sod land in which to set strawberries for the reason that such land is liable to be more or less infested with the larvae of the May Beetle, which means destruction to your strawberry field. I would not set on land that would run together becoming hard and cloddy, until it could be brought back to some of its former fertility.

My most satisfactory results have been obtained by using liberal supplies of well rotted barnyard manure, and I feel safe in saying, that there is nothing better nor even as good; but I would not hesitate to use a good grade of commercial fertilizer if I could not get the manure, as I have used it with good results. I find that spring is the best time to plant strawberries, and the earlier the better. Before growth begins the plants are dormant, and it does them very little harm to be transplanted, but after growth commences the plants are more tender and the change affects them more seriously, especially if the weather is hot and dry soon after.

After trying the different systems—hill culture, single and double hedge row, and half matted row—I have adopted the last mentioned system as the most profitable. By this method I get much more fruit which will average nearly as large and fine as in other systems with much less labor and expense. Another important item I wish to call attention to is that thorough cultivation must be given the plants from the time they are set out until the close of the growing season. Neglect of this will often result in failure, especially in a dry season.

When the ground is frozen in the fall, I mulch the plants with some kind of material which is easily procured. Marsh hay, straw, corn fodder, or waste excelsior all make good mulch for strawberries. In the spring when the plants begin growing, I rake the mulch between the rows and leave until the fruit season is over. I then mow the vines off, and rake up and leave part of the mulch on the row. When perfectly dry, I set fire to the bed and burn it over. This destroys about all the weeds and grass that have started, and also the rust spores and insect pests, and the burning will not injure the plants if a little caution is used,—that is, the mulch should be raked up loose on the rows with just enough on so it will burn to good advantage.

In cultivating the old bed I harrow up the row very little, as some

seasons the old plants make few new ones if any, and for all I can see the old plants are just as good or even better for fruiting. In nearly all instances the old renewed bed has proven the most profitable.

During the past fifteen years I have tested a great many different varieties of small fruit plants. Detailed reports would be too long and tedious, but I will give a brief description of a few of the most promising varieties, both new and old.

Bubach—One of my favorite varieties, has never failed to produce a good crop of handsome berries, succeeds in nearly all kinds of soil, will stand more heat, drouth and frost than any variety I know of.

July—Flowers imperfect, blooms late, ripens in late midseason. Plants medium in number, very vigorous and exceedingly productive. Berries a bright red, medium in size, quality fair for a tart berry. The value of this variety lies in its productiveness and lateness.

Fremont Williams—Flowers perfect, blooms late; plants large and medium in number, vigorous and fairly productive. Fruit large, smooth, and glossy red in color, firm and of good quality.

Senator Dunlap—Was almost a failure the past season. I think this was partly due to the fact that it was planted on very heavy clay soil, and my experience is that Dunlap is not a success when planted in such soil.

St. Louis—Flowers perfect, matures extra early; plants are numerous, vigorous and productive, fruit large, soft, and lacking in flavor and color.

Fendall—Flowers imperfect, matures in midseason, plants are numerous and very productive. Fruit is large, irregular in shape, and seriously lacking in flavor, color and foliage.

Highland—Flowers imperfect, matures early to midseason. Plants medium in number, vigorous and very productive. Fruit large at the first three or four pickings, afterwards dropping somewhat in size. Berries bright red, very juicy, good in quality for a tart berry.

Meator—Flowers imperfect, matures in late midseason, plants are very numerous and productive. Foliage is an attractive dark green free from all disease. Fruit large, dark red, firm and of good quality, one of the most promising new varieties.

Ohio Boy—Flowers perfect, matures about midseason. Plants are large and numerous. While tested under the most unfavorable conditions, it was one of the most vigorous, healthy growers on the place. Fruit large, and the quality extra good. While there have been some unfavorable reports from this variety, so far I am more than pleased with it.

Pocomoke—A good healthy grower and an immense cropper of large, solid, dark red berries of good form and quality. This variety will not succeed in a dry, hot location, as most of the blooms will blight under those conditions.

Gibson—A new variety, very closely resembling Pocomoke.

Paul Jones—Flowers imperfect; a promising new variety, and a vigorous grower. The fruit is large, resembling the Haverland to some

extent. I hear nothing but favorable reports of it from wherever it has been tried.

-*Monroe*—A strong healthy grower, plants medium in number and productive. Berries a dark red, large, of very good quality; has met with praise wherever tested.

Helen Davis—Flowers imperfect; makes a medium number of strong healthy plants. After one year's trial, I would regard this variety as promising. While there have been extravagant claims made for this variety, if it proves half as good as claimed, it could be considered as valuable.

Norwood—Flowers perfect; makes a moderate number of plants which resemble the Marshall, but is a better grower and more productive. Quality extra good.

Americus, *progressive*, and *Superb*—Fall bearing strawberries. As I had all three of these varieties in an unfavorable location, I could not give them a fair test. The new plants ripened up some very fine berries; as to yield, they were far from a paying investment. Perhaps they will give much better results under more favorable conditions.

Productive—Ever-bearer; not desirable, as plants are weak growers, easily succumb to disease, and are unprolific. Not a true fall bearer.

RASPBERRIES.

Early King.—I would consider this one of the best red raspberries ever introduced. I have grown it ten years or more and it has never failed to produce a profitable crop of fruit. Berries large, firm and of good quality. Canes vigorous, hardy, and free from all disease.

Sunbeam.—A very promising new red raspberry. Canes hardy, vigorous, and free from disease, while the berries are not as large or firm as the *Early King*, their quality is better and fully as productive.

Plum Farmer.—The best blackcap I have ever grown and the only one I am now growing. The past season, I had three rows of the *Plum Farmer* (each row being about five rods long) which brought one hundred dollars clear, which speaks for its productiveness.

Carrie—Gooseberry, vigorous, hardy and free from mildew, and a great many thorns. Very productive, berries averaging as large as the *Pearl* gooseberry.

Hansen Plum Sapa, *Opata*, and *Hanska*.—The young trees will commence to bear fruit the second year from planting. Very vigorous, hardy, and productive. Quality extra good. I consider the *Hansen* plums far more desirable than any of the native plums that we are growing to-day.

STRAWBERRIES.

W. S. POWELL, Bayfield.

I am not going to give you the history of the strawberry, but for the benefit of the new beginners, will point out some of the essentials in growing them commercially.

In the first place know that your soil is in first class physical condition and also that it is adapted to the growing of strawberries. Plow quite deeply in the fall if possible, turning under a green leguminous crop if you can, but do not harrow it down until spring, leaving the ground as rough as possible, as the freezing and thawing and the aeration will make it mellow and will also freeze out and destroy a great number of insect pests and eggs of same. Commence harrowing in the spring as early as possible and as soon as your plants are ready to dig, commence planting. Be sure the varieties you plant are adapted to your locality. You may find this out by inquiring of some one in the neighborhood, the names of the varieties they have had the best success with. Do not try too many varieties at one time as not all of them will be adapted to your soil and climate.

In setting them, set them in rows $3\frac{1}{2}$ feet apart and from 18 to 24 inches apart in the row. The heavy plant maker should be at least 24 inches apart in the row. Set them with a spade, one man using the spade while the other man places them in the trench made by the spade, spreading the roots out fan shaped, placing the crowns even or a little below the surface of the ground.

Commence working in them as soon as possible after planting, if it be the same day. I prefer using a garden rake, raking between the plants toward the center of the row. By so doing you fill the space that is sometimes left open by the planters not being careful, therefore avoiding the escape of moisture and the raking also causes the plants to show up better, when you start the cultivator. Shallow cultivation should always be practiced which causes the moisture to remain close to the surface. Frequent and thorough cultivation should be given at all times if you wish to get a good growth of plants for your next year's crop.

Do not need to take up any of your time explaining about training the runners but I want to dwell upon what will soon be the main question of the growing of strawberries and that is the use of commercial fertilizers. Our older growers tell us there is nothing more to write about the strawberry but I am going to predict that a new and better method is awaiting the man who will start experimenting with the different fertilizers. How many of you have used commercial fertilizers and in what proportions, also is it necessary to have soil examined in order to ascertain what is best to use. Some will say yes and others, no, as it is impossible to learn how much of the mineral elements already in the soil are available.

Do any of you know what our State Experiment Station is doing in the way of testing out the use of the different commercial fertilizers on the strawberry fields? The only one I have ever been able to find is a report of the Missouri State Experimental Station on the strawberry fields of Neosho, the strawberry center of the middle west. They have been experimenting for the past 3 or 4 years and during that time have found that phosphoric acid applied to the land, about 400 pounds to the acre has increased the crop nearly 100 per cent. They have used nitrate of soda alone and combined with potash and combined with phosphoric acid and find that with any of the combinations in which nitrate of soda had been added that the crop was decreased nearly one half. They state that the nitrate of soda assists in growing large thrifty plants but does not produce fruit buds.

Prof. Cyril Hopkins of Illinois, now of Massachusetts, is authority on soils and claims that ground phosphate rock is practically the only element in the fertilizer line that is necessary to produce large crops as the decomposition of it liberates some of the potash and the nitrates that are contained in the soil, but one must plow under more or less green crops, which produces sufficient humus and nitrates.

Why can we not start experimenting with the mineral fertilizers and report at the regular meetings the results of our experiments? Let us see if there is not something new about the growing of strawberries. There surely ought to be something as none of our Horticultural departments are a finished science, for we are learning something new every season. Mr. Rasmussen has told you how to pump water into the strawberry which certainly is something new and I will predict that in a few years that by the use of the right application of the mineral fertilizers we will double the yield of our crops. Some may say that we will have an overproduction of them but Kern will sell them if you will give him the chance.

There is one thing that I have learned and it has been a dear lesson and that is that you cannot make a success of growing strawberries on new land, such as we have at Bayfield. While we raise a fairly good crop and of good quality on such land the record breaking crops are grown on old soil specially prepared for it.

In closing will say that the coming spring I will plant about 15,000 plants and will use ground phosphate rock, drilling it into the ground each side of the row with a one horse disc fertilizer drill, drilling it immediately after setting the plants, and will report the growth of the plants next year. How many of you will do a little experimenting and do likewise?

RASPBERRIES.

J. T. HAUSER, Bayfield.

So much has been said and written on the culture of raspberries and so generally are they grown in our state that a person can simply say nothing new on the subject. Next to the strawberry the raspberry is the most popular of small fruit. It can be grown successfully in every part of our state. It will thrive in places where the strawberry would be a failure. It will bear some fruit under the worst neglect where under the same treatment the strawberry would be a complete failure. The raspberry would therefore be a more desirable fruit for the farmer to grow than the strawberry but like all other cultivated crops it will respond wonderfully by giving the proper care and cultivation. It thrives best in a rather cool and moist location but drainage is quite necessary. The finest black caps that I have ever seen were growing on lowland that at times was so wet you could hardly drive a horse over but the land was ridged up two or three feet where the plants were growing. The preparation of the soil should begin a year or two before it is planted; manured heavily and cropped by some cultivated crop one or two years previous to planting. This will put your soil in good tilt and free from weeds. Never plant on land that is full of clover, timothy or quack grass. Sod land is not fit to plant small fruit of any kind on. Spring is the best time to plant yet I know of good success of fall planting up in our country where we had a good covering of snow from early winter until late in the spring. Plant in rows 3 feet and the rows 7 or 8 feet apart. The first year a row of something else can be grown between. Last year we grew tomatoes in ours but they grew so rank that it interfered somewhat in the later cultivation. Cabbage, beans or peas would be a more suitable crop to grow between. Hoe and cultivate thoroughly and often not only the first year but ever after for they need lots of moisture to grow a good crop. At no time is cultivation more important than at picking time. I wish to emphasize this especially for this is a period when it is so often neglected. Follow the pickers with a cultivator and stir up the trampled down soil. It will mean a longer bearing season and good large berries to the last.

I do not believe in mulching between the rows but instead cultivate to break up and pulverize manure particles thus making it available for plant food. I believe a good fine dust mulch will hold more moisture than anything else.

Shall we prune and cut back the canes during the summer is a question where some of us differ. I think that depends a great deal whether or not you lay down the canes for winter protection. Where it is necessary to put them down it is best not to pinch back any during the summer as they will grow too stiff and stalky to bend over without breaking them. They should, however, be cut back in the

spring which insures better, larger and cleaner fruit. Summer pruning depends somewhat on the variety you are growing. For instance Cuthbert seems to throw out a good many more laterals than the Marlboro. If you do any summer pruning, do it early enough so as to give the new shoots time to ripen the wood.

All suckers not wanted treat as weeds, cutting them down while they are little before they have sucked half the life out of the bearing hill. After picking, cut out the old canes and seed down to crimson clover. I like this plant best as cover crop. It is the only clover we can grow in the berries that will not become a weed. It makes a larger growth than any other clover would in that time and judging from the nodules on the roots it seems to have the power to gather more nitrogen in the *early* stage of its growth than any other legume I know of. With us in the north, it sometimes lives over but being a biennial plant it will die the next season. I consider this the best plant to grow in all cane fruit as a cover crop. As to the varieties to grow we favor the Cuthbert and Marlboro, giving the latter the preference, as it picks easier, ships better and yields more than the Cuthbert. The Cuthbert is far best in quality, a little later and possibly hardier than Marlboro. The reds reproduce themselves and are propagated by suckers.

For black raspberries we grow the Plum Farmer, a vigorous, hardy, large growing, good quality berry. All black caps are propagated from the tips by covering them in August or September and then cut off the cane when wanted for transplanting. I think the black caps are going to be the most profitable ones for us to grow. Last year they sold, I think, for a little more than the reds. They stand shipping better, pick more berries at a picking and it is much easier to get pickers to pick them.

In the picking of raspberries possibly more pains should be taken than in the picking of any other fruit. Wet berries put into a box on a warm day will grow whiskers in a very short time. Care must be taken not to get any over ripe berries in the box nor bruise or crumble when picking. They should be taken into a cool, breezy packing shed as soon as possible.

THE DISTRIBUTION OF HORTICULTURAL PRODUCTS.

A. K. BASSETT.

Why does the grower get only 35c of the consumer's dollar? Primarily, I should say, because he doesn't go after it right.

In this day of rush and scramble for the almighty dollar, the average grower does not stop to give much thought to "marketing", the most important feature of fruit raising. He is not a wide-awake business man and leaves that part for someone else to do. The middlemen are very glad to do it and make it very easy and convenient for the grower. The grower is very willing to let the other fellow do the selling, and takes the easy way. He stamps the barrels with the stencil sent him, carts them to the depot, and then watches the mail for his check. If he gets as much as 35c of the consumer's dollar, he is delighted, and never gives his trees another thought until next picking time, when other farm work is begrudgingly stopped for a short period and the whole family rushed out to strip the trees of everything they dare put into the barrels, when the same are stamped and hurried off again to help congest the market.

Once in the hands of the middleman, the apples which probably brought the grower a dollar or two a barrel begin to soar in value. The commission man, the wholesaler, and the retailer, each in turn, want to get a fat slice. And by the time the consumer who comes into the store pinching his nickels, buys them in 10c lots and has them delivered to his door, the apples have trebled in value.

It is hard to get at the root of all evils, but it seems especially so in the case of fruit distribution. In the first place, the growers who ship poor fruit do an injustice to those who are honest and ship only fruit of good quality.

The railroad companies often get a big slice for hauling them back and forth, but they justly earn their share. The commission men have for their motto,—who can blame them—"get a lot while you're getting". It is self-evident that there are far too many in this class, and if half of them would go out into the country and pull quack grass and kill potato bugs, we wouldn't read of so many of these firms suffering financial distress.

It seems to be the desire of everyone to ship to the large cities, causing a congestion of fruit there, when probably within a few miles from the place where the fruit is raised, there is a shortage. By the time it is again shipped back, the freight rates, cartage and commission fees, have added considerable to the price of the fruit which, on the other hand, has deteriorated. Very often all the late apples are shipped out of a locality to be put into storage in the city only to be shipped back again to sell at a big price.

Thus we see that no matter how honest the buyers may be, the marketing is done in such an unsystematic and round about way that

it is bound to be expensive, even by the time it gets into the retailer's hands. We are all aware that this class, too, is far too numerous and half of them ought to be helping with the quack grass and potato bugs. They must charge heavily to meet expenses. Here, too, the consumer is at fault by buying in extremely small quantities. Usually 10c worth—just enough to make a pie—or a few to put into the fruit dish to help decorate the sideboard when company is expected. Usually this small quantity has to be delivered and often the retailer must wait from one to three hundred and sixty-five days for his pay.

Often, too, the consumer is not satisfied to buy the good home grown fruit which the retailer can purchase for far less money. They want Baldwins and other eastern apples, which cost more in getting here than they originally sold for. Or else they want those pretty, flavorless Western apples wrapped in tissue paper.

I was reading recently of an American firm that imported a lot of French Cheese boxes in which to sell their cheese. Now the consumer will pay twice as much for that cheese, and it will taste better because he thinks it came from France.

Last fall a Baraboo lady showed me with great pride a peck of Pound Sweets which she had purchased in Milwaukee for 40c and carried home. No doubt they were some which our President Palmer had shipped there. But people are anxious to get things raised away from home. I know it to be a fact that some of my neighbors go 12 miles to buy apples in the Palmer vicinity and some of Palmer's neighbors come and get apples from me.

Many consumers are reducing their high cost of living by buying direct from the growers and I think many more would do so, but they have been swindled so many times that they have lost confidence in that way of buying. Too often the grower tries to get even more than 100 cents of the consumer's dollar. He sends him inferior fruit and perishable varieties instead of good keepers. I heard one of my neighbors tell of an auto party which stopped at his place at picking time and left money for two barrels of select winter apples. When he shipped the apples, he sent them Longfields. Needless to say, this consumer was greatly disappointed, as he expected to get apples that would keep all winter.

Very often the grower makes it very inconvenient and very expensive for the consumer to get fruit at all. They claim it is a great hindrance to bother with a few barrels, especially if they want mixed varieties and for that reason place an extra high price on the fruit. Very likely he gets off an odd barrel on them which he couldn't dispose of in any other way.

One reason the grower gets only 35 cents of the consumer's dollar is due to the fact that he raises too much hog-feed and not enough good fruit. Nevertheless he is anxious to sell this poor stuff at any price. Thus it becomes a drug on the market and a check on good fruit. It seems queer that with all that is preached and printed about spraying, many growers, some of them good horticulturists, still keep on raising scabby, pinched, and nubby fruit. It is certainly a poor ad-

vertisement and sets a bad example for those who pattern after us.

Not only are there too many poor apples raised, but too many poor varieties are planted. Many varieties will not stand shipping. If we wish to get more than 35c of the consumer's dollar, we must raise varieties which will keep long enough to make it profitable for the consumer to buy them by the bushel or barrel.

If all the growers would agree to sell only No. 1 fruit and give the remainder to the hogs, I think they would have no trouble in securing the coöperation of the consumer. The idea is becoming very popular, all the consumer needs is confidence in the grower. Then the grower might receive 50 or even 75 cents of the consumer's dollar. Not only would the grower receive more for his apples but the consumer could afford to use more.

The grocery and fruit merchants will always handle apples. If the growers were well organized and sold only No. 1 fruit, they could dictate the price the retailer should charge the consumer when selling in barrel lots. By this method, the consumer ought to be able to purchase his fruit at a more reasonable figure, and it would also increase consumption.

In selling direct, the grower must have acreage enough to supply fruit every year, and he also needs cold storage on the farm so he can supply his trade during all seasons of the year.

There is an old saying that:

"For every trouble under the sun
There is a remedy or there is none.
If there be *one*—go and find it;
If there be *none*—never mind it."

I think in this case the best remedy is to be your own middleman.

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Bayfield at the 1913 State Fair.



Cranberry bog and fruit, State Fair 1913. Shown by State Cranberry Growers Assn.



Some of the flowers in the Amateur classes, 1913 State Fair.

PROBLEMS IN MARKETING.

F. KERN, Bayfield.

I have been before you on this subject at least once before and while I do not know that there is anything new to be said on it there are always new people in the business who may be interested.

It is *the* subject that interests *us*, we horticulturists. We are all *vitaly* interested in the question of marketing, and *some* of us are *vitaly* interested in the *problems of marketing* and I happen to be one of them.

Really, it is the successful marketing of any crop or product that makes it profitable. It matters little how cheaply you are able to produce a crate of strawberries, if you are unable to reach a market with them, they are a total loss. You have lost all you invested and your effort as well, but if you are able to reach the best market with them you can grow them at a profit.

Some growers, and some fruit growing districts are favorably located by having the markets at their door. I have in mind Oconomowoc, for instance, with Milwaukee within such a short distance that strawberries absolutely fresh can be laid down for a very cheap express rate and can always find a ready market at the very top market price for they are not growing so many that they are overstocking the market. There is no problem there.

There are so many problems of marketing that I scarcely know which or how many of them to discuss here, but to me, proper distribution seems to be the most important. *Proper distribution* with most of us is an unknown quantity that is always represented by X. Perhaps XXX would represent *proper distribution* and X would represent *distribution*..

Proper distribution in my judgment is the placing a shipment of berries in a market where they are wanted and keeping our berries out of any market that properly belongs to some other district. For instance when we have berries at the same time that Excelsior, Long Lake and Minnetonka, Minnesota are on the market, they being within thirty or forty miles of Minneapolis, we ought not be shipping more than two hundred miles, into Minneapolis. That market belongs to the growers who are favorably located. They can deliver fruit at a lower price than we can as the rates are a great deal lower. They can deliver them in a great deal better condition than we can. Then why should we at Bayfield dump a portion of our crop into Minneapolis when these points can supply that market to so much better advantage than we can? Suppose Excelsior is on the market when we are at Bayfield and that they are able to get \$1.75 per crate for berries in Minneapolis, because of their excellent quality due to the very favorable conditions of short haul, etc., and we will suppose that we are picking equally as good berries at Bayfield, but, being more than

two hundred miles from Minneapolis we cannot get them on the market the morning following the day we load them, but we think that Minneapolis ought to be a good market and we ship a car, or two or three cars, daily to Minneapolis because we do not know where else to send them. They arrive late; are carried over to the next day and come in competition with the fresh stock from Excelsior. Who suffers? We both suffer. My berries sell, they all sell. But because I have shipped too many berries into an already stocked market they sell at a low price and because mine sell at a low price they bring down the price on the good stock that would have otherwise brought a profit to the shippers. This is not all the harm we have done. We have broken a good market for the balance of the season. Who broke this market, Excelsior or Bayfield? To whom did this market belong? This is *distribution* and is represented as we said at the beginning by X and one of the problems of marketing a perishable crop is to avoid such conditions.

How can we avoid a recurrence of such marketing? I should say that it would be well to have a broad enough market and be well enough posted on all the *different* markets and have a reputation for *quality* so that you will not be compelled to overstock Minneapolis.

In order to do this it would be necessary for every fruit growing district to be organized and the shipping handled for each district by some one man. With such a system we could all keep in touch with our competitors as to amount of fruit going to the different markets and in that way get better distribution. Under the present system we are all shipping to points we ought not to and we are leaving untouched many points we should reach to better advantage, because we do not know what the other district is doing. Washburn and Bayfield are both heavy shippers of Strawberries. Washburn is but thirteen miles from Bayfield but owing to the difference in soil, Bayfield berries are on the market about a week earlier than Washburn berries and we ship quite a few berries to Washburn during that week, but as soon as Washburn berries are ready for market we do not ship to Washburn. Why? Because we are in touch with the manager of the Washburn association and know that they have berries of their own and that in order to sell berries in Washburn we would have to cut the price, and that would only force their price down and we would both lose. *We know better.*

Here is another problem: We ship a car of berries to St. Paul to a commission merchant. This car goes through Spooner, Shell Lake, Cumberland, Turtle Lake, Clear Lake, New Richmond, and Hudson to St. Paul. The Commission merchant reships small lots, say two to five cases to every merchant in every one of these towns. A freight charge and an express charge on every shipment to every merchant in every one of these towns. WHY?

Because our system is wrong. Because we are behind the times in marketing. The berries do not cost the commission man a cent. We give them to him to sell and we allow him to take out whatever he thinks his time and trouble is worth, to do the *very thing we ought to do ourselves.*

Another problem that we have at Bayfield to contend with is the pool commission house. It is a fact, I do not know whether many of you know it but I am prepared to prove that the pool commission houses get two commissions out of every car of berries that we consign that is split up among the members of the pool. Since I have learned this double commission system I have either sold outright or have not shipped them at all. During the past season I sold but one car to the pool. I consigned to several independent commission firms with very satisfactory results. I sold one firm a car of berries practically every day of the crop and I collected every cent on every invoice and did not sell a car below \$1.50 per case. I had opportunities to sell cars in that firm's trade limits but I staid out of its territory because it could handle as many as we both could and could get a reasonable price and therefore could afford to pay me a good price. What could I expect to gain by taking a part of that trade? I believe in protecting your customer every time that it is a real benefit to our growers, by giving him all that he can sell and keep a healthy market. The only day that I think I failed to ship this customer was when he called me up and told me that he had received a car of Washingtons on consignment and advised me to divert the car that day, which I did. I did not get as much for it as I had been getting but I kept that market healthy for several other cars that followed and on the whole I profited by taking a loss on that one car by shipping it out of the territory. This instance might be represented by XXX, but it is the only instance I think on my records. It is my plan to do better in the future.

In 1912 I had a good market in a town and was selling outright at a good price, \$1.85 per case on track. A commission man in the opposite direction was trying hard to get me to consign and I was trying equally hard to get him to buy. He simply would *not* buy. I had not shipped a berry to this commission man nor had there been a crate of Bayfield berries shipped to any man or firm in that city up to that time. This commission man, we will call him Goodman, called up my customer who had paid me \$1.85 that day and offered him Bayfield berries at \$1.60 delivered. You can imagine what my customer called me. He called me up and then called me down and when I finally got a chance to get my breath and explain that Goodman had not had a berry nor had any other man in his city had a case of our berries nor as much as a price below \$1.85. I was obliged to put up \$100 as a forfeit if my customer could buy a car of Bayfield berries from Mr. Goodman. I never was called upon to forfeit the money and I held my customer, but Mr. Goodman has never had a case of our berries from that day to this. This is another problem of marketing.

At a meeting held here in Madison during our winter meeting last winter, an attempt was made to get together on a State marketing association. That, in my opinion, is the only method of solving the marketing problems, and it will take a long time to perfect that, so that it will solve all the problems of marketing, but it is certain that it could be accomplished and that it should be accomplished.

So much has been said about marketing direct from the producer to the consumer. This is an attractive proposition both to the producer and the consumer. I am going to predict and without fear of contradiction, that it cannot be done unless the consumers organize and the producers organize. How am I, a producer, to know that Mr. Cranefield, the consumer, is responsible and that I will get my pay for the berries I ship unless he belongs to some organization that will guarantee his credit?

There must be something like a Buyers' Credit association where each member can establish a credit and place his order, before the producer will have faith in his customer, and the producer must also show that he is reliable if he expects the consumer to send cash with the order. It has been shown, too, that where there was no organization at the producer's end he will set the price and later when the order comes he will have had a chance, or he will think he *will* have a chance to get more money and he will raise the price and if the consumer is satisfied to pay the increased price the producer feels sure that his price is too low and he again raises it. In a test being tried out now by the express companies this has proven their greatest obstacle.

I am an agent for the American Express company and they are trying out this system. They send out forms and we agents are expected to confer with some producer and see for what he will furnish the commodities mentioned and refer his name to the superintendent of the express company who then places his order with this producer for so many of these packages and they are shipped direct to the consumer who has paid the express company for the package in advance. The system is planned all right but the producer does not stick to the price. If both the producers and the consumers were thoroughly organized and we had a State Marketing association the problems of marketing would be solved.

I do not mean that organizations all succeed.

Records show that it is difficult to organize the producers and maintain a good, strong working organization.

There is a reason, perhaps several reasons, but what seems to me to be the prime reason is, that they seldom ever finance their association as they should; they start with a small capital and after it is once started they think it should always run without assistance. This is a serious mistake. Marketing associations must be supported by every member to succeed.

This brings to mind the State Marketing association of Minnesota. I happened to be present when that association was organized and there is no question but that their plan was good and the association would be of great benefit, not only to growers of the state of Minnesota, but of Wisconsin and Iowa and perhaps many other states, if all who believe in such an organization would support it until it was able to stand alone. They organized. They elected officers. They rented offices and they furnished them. They hired a manager. It sounds good so far, but they started with about ten per cent of the

capital they should have had and when their business had grown as it has to the handling of nearly two thousand cars a year the stockholders of that association pat themselves and tell what a wonderful association it is and the manager is besieged by every shipper to advance him money on his car and he is sweating blood day and night to hold a wonderfully growing business together for the benefit of the growers who are the stockholders, and if it should fail it would be we shippers who fail to put any money into it that are at fault. What is true of the Minnesota State association would be true of a Wisconsin State association, yet I believe that a State marketing association is the only logical method of solving the problems of marketing.

OUR HOME MARKET.

W. J. MOYLE.

In looking over the State at large, we find that there are five hundred or more cities, with a population of five hundred or better; and furthermore on investigation and inquiry of the grocers, of these towns, we find that fully two-thirds of them have to import practically all of the fruit consumed.

Here in our estimation, lies a fertile field for horticultural extension work. We don't doubt for a moment, but what all of these towns would be provided with home grown fruit provided, we could prove that a five acre fruit farm, properly planted is a possibility within the reach of the average mortal and would also prove a howling success.

Ever since the days of Adam we have had model fruit farms drawn for us on paper, and we have seen many set out, only to watch them degenerate into a patch of weeds. The object of this paper, therefore, is to map out a practical, successful, financial fruit farm of five acres. In the first place we want to interest the attention of 500 young farmers who are at present engaged in general or dairy farming, within a mile or two of any of these towns. These young men should be successful in their present occupation, that is be able to make both ends meet and not afraid of dirt or work. With this foundation we will ask them to set aside five acres of the best soil on their farm and plant according to directions. Success will be theirs and this piece of land, will be found the most remunerative on the farm.

First, set aside 2 acres to apples as follows; 100 trees to the acre, rows running north and south 30 ft. apart and trees 15 feet apart in the row. 50 *Tetofsky*, 50 *Duchess*, 50 *Wealthy*, 25 *Fameuse* and 25 *N. W. Greening*.

$\frac{1}{2}$ acre of Red Currants, *Fays Prolific* and *Perfection*.

$\frac{1}{4}$ acre of Gooseberries, *Houghton*.

$\frac{1}{4}$ acre of Red Raspberries, *Cuthbert*.

$\frac{1}{4}$ acre of Black Raspberries, *Kansas*.

$\frac{1}{2}$ acre of Blackberries, *Eldorado*.

$\frac{1}{4}$ acre of Grapes, *Moore's Early and Concord*.

1 acre of Strawberries, *Dunlap and Warfield*.

The above list can be changed according to locality, but all of those mentioned have proven their worth, over a large extent of territory in our State.

This land should be in a good state of fertilization before planting, then afterwards given the best of cultivation. The first years, hoed crops such as potatoes, beans, etc., should be grown among the apple trees, with a liberal application of barnyard manure to keep up the fertility of the soil.

We assure our reader, that bountiful yields and an ever ready demand, right at your door, at the highest prices, will cause you to look upon this project, with satisfaction and pleasure.

"THE GROWER RECEIVES 35c OF THE CONSUMER'S
DOLLAR. WHY?"

FROM THE VIEWPOINT OF THE COMMISSION MERCHANT.

Paper by M. C. KIPPER, Sec'y Milwaukee Produce & Fruit Exchange.

The topic for discussion, "The grower receives 35c of the consumer's dollar. Why?" is indeed, a lively one, as is noted on the program. Not only is it a lively topic, but is one, also, that might be discussed indefinitely, without any apparent success toward arriving at a conclusion.

Speaking from the point of view of the commission merchant, it is hard to conceive how 35c was the accepted amount that is received by the grower for each one dollar that is spent by the consumer. To my mind it may be that, or it may be more, or it may be less. I do not believe it to be possible to determine with any degree of accuracy the amount that is received by the grower for his product from each one dollar that is spent by the consumer. If it is intended that the figure, 35c, is the difference on one particular transaction, and for one certain commodity, then I am wrong, but I do not think that is the intent. My remarks are based on a general average for all commodities and for a reasonable period. I will admit that the grower does not receive one dollar out of each one dollar that is spent by the consumer. Were I to designate a figure representing that portion which he does receive it would be merely a guess. There would have to be taken into consideration to make a calculation a great many things the kind of commodity, location where crop is produced, its proximity to a common carrier, time of marketing, condition at time of marketing, the requirements of one market as compared with those of another, cost of handling the different commodities, shrinkage, etc., etc. I am afraid that a corps of mathematicians would find themselves baffled if an attempt were made to determine a true average. Digitized by Google

I stated, and we all know that the grower does not receive one dollar out of each one dollar the consumer spends for his product. In these days of "high cost of living" and high prices, the paramount issue with the members of your society is "why is not the amount the grower receives for his product greater than it is." This is explainable, and it will not take long to do it, by the new conditions which have arisen, and which confront us on every side. New standards of living by the public are in a measure responsible. The market basket of our grandmother's time now adorns the relic room, along with the old spinning wheel. Ordering is done largely by telephone, and the demand is usually for the best of everything, thereby keeping taste in the proper state of cultivation. City folks, it appears, would rather pay two dollars per bushel for apples in January than to get the bushel for the picking in October. That is our way of living. The citizen who wants a crate of Rocky Ford melons or a box of California oranges does not depend on the producer, but on his dealer; the middleman, who makes the purchases, transports the shipment in a refrigerator car or a fast freight and deposits it on the customer's back porch as fresh as when it was picked. The cost of high living must necessarily be high; there is no escape from it; the demand for comfort and luxury is universal, and the bill must be paid.

A large part of the difference in the price received by the grower and that paid by the consumer is accounted for in the service that is demanded. The consumer has led the middleman along and has kept exacting additional duties, necessitating additional cost in doing business. The cost of labor has increased, rents and taxes have gone up—in fact every item used in the conduct of the business has increased. Worthy of mention, also, is the fact that during the last few years there has been an epidemic of freak legislation for the regulation of the sale of farm products. There is no doubt about the imposition of many of these new requirements having increased the cost in operation, and thereby further widening the gap in prices paid by the consumer and those received by the grower. The big markets of the country are swarming with food inspectors, health inspectors and Federal and State sinecurists who draw big salaries.

Supplanting the middleman is a subject of general interest. Especially as Governor McGovern has given it emphasis, with his commission bill and the message he sent along with it. At this time it will probably not be amiss to define him. He has been denounced as a parasite and his elimination has at times been demanded. Let us first study him, and examine his relations to the shipper and to the consumer and see whether he is not a man, like the rest of us, neither better nor worse than we, and whether he is not performing a useful service, and doing it better than can the grower, himself, and therefore entitled to his place in the economic scheme of our organization. If, after we have made a thorough study of the subject, it appears that he is a superfluous middleman, then the superfluous has no justification for existence, and should be eliminated.

"What is a middleman?" The United States department of agriculture (Report No. 98) describes him thus: "In addition to finding purchasers for commodities on the market, securing goods for persons intending to buy, attending to transportation and storage, and making and transmitting collections of money, the functions of a middleman may include also the collection of small lots to make a carload, shipload, or other large unit desired by a certain buyer or class of buyers; and likewise the middleman may serve to distribute a large consignment to many purchasers. A carload of berries is too much for an average retail merchant to handle; it is generally necessary to secure a number of such buyers in order to dispose of a car of such produce. On the other hand, the trade in fruit, as in many other farm products, is conducted over such a vast extent of territory and in such large quantities that it has become necessary for most of the individual consignments to be of considerable size. Freight rates and conditions of freight service make it almost necessary that shipments of most farm products be made in car lots. Hence the double service of collecting small consignments into carloads and of distributing carloads among many buyers, has become a necessary part of the present system of distribution."

With reference to the "Elimination of the Middleman" the government report says.

"Coöperative marketing does not necessarily, and in fact, often does not, eliminate any middleman in the process of distribution. It often happens that when the middleman is eliminated by an association his services are performed by the association itself. There has been a transfer of service, from one to another, but no discontinuance of the service."

If growers are to coöperate in the marketing of their produce where it is most wanted, at the moment, and will not only bring the best prices, but will serve its purpose with least waste, then some growers must become expert enough in such matters to fill the place of the middleman. The middleman in the large cities, for example, finds out each day, where he can best dispose of a shipper's goods, that is, where it is wanted, but if he has a call from St. Louis or St. Paul for some article he hasn't on hand, he immediately combs his field to see if it is to be had. This is not only his business, the business by which his bread is earned, but it constitutes a suggestion of the great complex machinery of distribution.

From the foregoing then, the logical conclusion is that certain middlemen between producer and consumer are necessary economic factors, and the point to be determined is whether the middlemen now existing, are performing their function in the most economical manner, and whether producers can perform their functions at a lower cost to themselves. The writer is satisfied, from fourteen years of active service in the fruit and produce industry, that the elimination of the essential middleman is impractical and impossible, at the present stage of social and economic development. In his judgment, the essential middleman in the fruit trade, other than the associations and

sales organizations of the producers themselves, are the wholesale fruit merchants and the retail fruit merchants. For years the question of the elimination of the jobber has troubled manufacturers of every sort of commodity; the brightest minds in the country have wrestled with the problem; millions of dollars have been spent in experimenting to that end, and in the vast majority of cases, it has been proven, to the complete satisfaction of those concerned, that the jobber has a clear title to his economic existence, because of his ability to perform his function, spread as it is over a multitude of productions, more cheaply than the manufacturers or producers of those separate commodities could perform it individually. There have been a few producers who have found it possible to eliminate the jobber economically; but there have been especial reasons for these exceptions. Everyone of them have been based on a commodity which is consumed in great quantities by the masses, and which has an all-the-year-round sale. Even with these conditions in their favor, the elimination of the jobber has involved the expenditure of huge sums of money, for where the jobber is eliminated, the producer must replace his service; the building of warehouses in every city; the maintenance of warehouse and office forces at every point; the extension of credits to the retail trade; which in itself is a giant undertaking, the maintenance of delivery equipment, etc. It is perfectly manifest that no such undertaking is practical in the case of the grower of perishables, for many reasons, but one is enough, viz: his is a season commodity; his is a six months business, and the economic waste involved in the attempt to replace the jobbers' facilities by his own would be unthinkable.

Probably more blame is put on the middleman than on anybody else. The public thinks that the middlemen form one big combine. The public does not know that each middleman sends out forty or fifty telegrams a day when an article becomes scarce, and each house tries to secure from the others where it can, the coveted article. The public does not know the risk the middleman runs in having goods shipped long distances in either hot or freezing weather. Those familiar with the business of distribution know that out of every five deals the middleman goes into, two of them go wrong, and cause a financial loss. If middlemen would not hit it right three times out of five they would be unable to pay their railroad bills, cost of goods and make a living profit out of their hard work. There are at times reports that middlemen would rather dump goods they had received than sell at a low price. This, of course, is all a mistake.

It is true that there is more or less speculating done in food commodities, but this is no more general than in any other line of merchandise. A middleman visits various sections at stated seasons and buys stock for consumption during the time of non-production. If this did not occur there would be waste during the period of overproduction and the producer without an outlet would be forced to sell at low figures or have his crops remain on his hands with no market. It is as necessary to have speculators in the produce business as it is to have large rivers drain small ones. The buying of speculators puts

new life into the grower and gives him courage to grow another crop the following year. If the farmer prospers the whole community reflects his condition. Were those who complain the loudest about the prices they are forced to pay to try and produce the goods about which they complain, a large majority would soon be silenced. The remark is often made, "that apples or other products can be bought for one-third of what they bring in the market if purchased in the country." This can be easily understood. Oftentimes goods are raised in a section to which no buyer goes as there is not enough of a certain commodity grown there to make it worth while.

Losses that the speculator sustains are seldom considered and only his profits are mentioned. Two years ago speculators made big money on onions but last year most of them lost all they made the previous season. Onions last year sold for twenty-five and thirty cents per bushel less than cost, and the consumer got the benefit. The middleman gets his entirely unwarranted. People do not know that he works sixteen to eighteen hours a day and gets less for efforts than is received from similar exertion in any other line. Most of the time he is aiding growers in getting more for their crop than actual conditions warrant.

Middlemen pay more freight to the railroads, more express charges, more telegraph bills, larger telephone bills than any other class of merchants in the country for the amount of business they do.

Ralph P. Wonnell, a middleman, who recently addressed a gathering of his kind, at Cleveland, Ohio, on "The Middleman" rid himself of the following witticisms:—

"A middleman may be a young man, an old man, or a boy of any nationality, conversant with any or all languages.

To be successful he should be physically sound and start while young in order to have a long time in which to repent or start something else.

He labors 365 days in the year, minus the Sundays only. On Sundays he sleeps, if he is not too nervous or if he is not too new in the business.

His sole purpose in life during his waking hours is to bend every effort to connect the consumer with the product of the soil. This is how the people here and there get what they want to eat when they want it, and their usual three meals a day.

In the field of production there seems to be a lot of people and considerable land covering a territory comprising the whole wide world, engaged in producing what we eat, and each individual grower sending and spreading it as far as he can reach. It is left for the middleman, however, to do the bulk of the assembling of it, and to facilitate the distribution thereof, thereby making larger production possible and profitable.

His time, money and knowledge, gained from hard knocks of experience and competition contribute to an economic solution of the problem of distribution.

His primary object in working is to do enough business; that the

total of his efforts will meet the depreciation of his equipment, keep it in running condition and repair, and give to those dependent upon him as good a living and opportunity in life equal to that enjoyed by his neighbor.

He covers all sections of the world from whence comes his supply as the seasons come and go, in order to keep the year full, to meet the requirements of the business he has drawn to himself, and which are dependent on his efforts.

He is supposed to eat and sleep like other people. The brightest of the mornings are his, and the birds bid him welcome while humanity sleeps.

He backs up his judgment with his time and money, but often fails in the collection of all that is his due, while the profit of many purchases and misplaced credits show up on the wrong side of the ledger.

Withal, he is usually congenial and accomodating to a fault, and a dispenser of practical philanthropy. His generosity reaches the producer, his fellow distributor, and he also contributes his share to the consumer when he can not come across.

To the grower he is without doubt the best friend they ever had. The modern middleman, among the most intelligent and progressive farmers wears a halo instead of a silk hat. In explanation of this statement would say that he cares little what he pays for a product, so long as it will resell at a margin.

Thus as humanity comes into existence, its wants begin, ceasing only with the obituary; the middleman comes in to serve his purpose, a product of modern civilization—a calling as legitimate as a profession or any other line of endeavor.

As the day comes between dawn and twilight, as the machinery that turns the raw wool into the finished article of apparel, the middle that connects the two ends of everything, the middleman serves his purpose.

As long as the demands of the dinner table takes in everything from the onion that comes from the region of the Nile, rich luscious grape clusters of Spain, the banana from Honduras, the mushroom from Russia, tea, coffee, and spices of other climes, together with the many and variable products of our own dear land, covering the sardine from the upper coast of Maine, the tomato of lower California, the luscious (looking) apple of the Wanatchee valley to the grape fruit of the Isle of Pines—so long will the consumer be largely dependent upon the middleman, and his ability to concentrate and supply as needed; yes, long after tariff reductions, parcels post and municipal markets have ceased ringing the charges; the high cost of living."

THE ILLINOIS WAY.

J. C. HEATON, Illinois.

The object of this paper is to tell you a few of the things Illinois has done and is doing in horticulture with special reference to apples.

I well remember about the year 1868 when the first crop of tomatoes was grown near Cobden, Illinois, and was reported to have sold on the Chicago market for \$7.00 per bushel the season through. Our strawberries were selling at the same time, and for several years after at from \$3.00 to \$5.00 per twenty-four quart case.

For a generation or more southern Illinois had been noted for its large crops of tobacco and children, especially children. Our country was new and we were carefully feeling our way to better and more profitable crops, except children, considering them the most profitable crop grown by the Horticulturist in any clime.

When we saw the possibilities of our country in horticulture we were not slow to take advantage of them. We began in a small way to raise fruits and vegetables for the Chicago market, shipping by express at first. It was not long however until our output had become so great that we asked the railroad for a cheap, fast freight service, which they were prompt to give. This gave such an impetus to the business that we went, in one season, from wagonloads to carloads, and it was only a short time until trainloads were gathered up along the line.

To give an idea of the enormous business done along the main line of the Illinois Central in fruits and vegetables, I will here give a brief statement of the amount shipped in the year 1913 from two of the principal shipping points in the clay hills of the southern part of the state. Anna shipped—130 cars of sweet potatoes, 100 cars strawberries, 53 cars apples, and 300 cars of truck including onions, pieplant, tomatoes, melons and various products of this kind. Cobden shipped 160 cars of sweet potatoes, 55 cars of asparagus, 65 cars of pieplant, 64 cars tomatoes, 10 cars strawberries, 115 cars apples, 35 cars peaches.

The crop at these points was 50 per cent short of the average on account of the extreme drouth. Cobden alone in a good season has shipped as high as 30 cars of tomatoes in one day. Anna, one year, shipped 21 cars of strawberries in one day. While these two places are the largest shipping points in that part of the state, they are typical of many others in the same vicinity. These were solid cars and were handled by the shipping associations at each point. Beside this large quantities went from each place by express and freight in less than carloads. So much for the horticultural development of that immediate section. From the above one can see that apples are a small factor in their horticultural output.

Until about the year 1875 nearly all the apples were grown by the general farmer in his home orchard. There were few orchards of ten acres or more in the state, notwithstanding the smallness of the orchards their owners began to realize they were the most profitable part

of the farm. The only things necessary to have good apples in those days were to plant the trees and cultivate. Nature did the rest. Observing people soon saw that there was no crop so easily grown and so profitable as apples. As a result farmers who had the means began to enlarge their orchards to twenty and sometimes forty acres. When these came into bearing they were veritable mines of wealth. Apples became the general talk of the country. Everybody was telling everybody else how much money was being made in apples. It was a common thing for men to meet on the street corners or in the stores and figure out fortunes in apples, and the beauty of it all was that it cost practically nothing to grow them. Just plant the trees, wait a few years and reap a golden harvest. They figured that if one tree would produce twenty bushels, which is a conservative estimate for a full grown Ben Davis, fifty trees would produce a thousand bushels which at \$1.00 per bushel would bring \$1,000 an acre. Allowing one third off for harvesting and marketing there would be left \$666.00 per acre net profit each year. In those days there was no such thing as a crop failure consequently there were no allowances made on that score. Such figuring was in harmony with conditions and results at that time, and was so reasonable that not only farmers but everybody who had the "get rich quick" desire went into the apple business. "The butcher, the baker, the candle stick maker," professional men, bachelors, widows and old maids, all, everybody who could raise the money began to plant orchards. Bankers and money lenders made liberal loans to those who desired to plant but had no money to buy trees. Everybody seemed to have been bitten by the apple microbe and was wild to lend a hand in developing the business.

In Clay county twenty thousand acres were planted, with Richland, Marion, and Wayne closely following in the order named. In one place in what is known as the apple belt of the state, along one public highway there are twelve continuous miles of apple orchards, mostly Ben Davis. Large bodies were planted in different sections throughout the south half of the state. The owners were happy in the thought of the rich harvests that awaited them.

These orchards were cared for as only an enthusiast will care for a thing on which he has set his heart. The first crop came and the fruit was fine, fulfilling the expectations of the most hopeful, except that the large blocks, all of one variety, were a little shy all through the center. The second and third crops were about the same.

All this time nothing was being done to control the insects and fungous diseases. Such large areas of orchard soon became prolific breeding grounds for these pests, and the orchards began to fail. In a few years they quit and most of them stayed quit. The experiment station sent out men to investigate. First they found large blocks of trees, sometimes twenty to forty acres, all one variety and as a result pollination was weak. To remedy this they recommended that every fifth or sixth row be taken out and some good pollen bearing variety planted in its place, or better, that the trees in these rows be cut back and top-worked to some strong pollinizer. This to be followed with two or

more applications of Bordeaux and Paris green at stated intervals, that being the standard spray at that time. Only a few had the courage to take this advice. The majority preferred to trust to luck and await developments.

Up to this time the only enemy of the apple known in our country was the codling moth, which had always been with us. Later we learned of the apple scab, blotch, bitter rot, and curculio, either of which may of itself cause failure of the crop if not controlled by spraying.

This was so discouraging to those who had planted for speculation that they turned their attention to more congenial occupations and left their orchards to take care of themselves.

As a result they produced nothing better than evaporator and cider stock. But out of all this failure and ruin there were a few who were not quitters, who had the courage of their first convictions, and were determined to do all that was possible to be done while there was a ray of hope. Our Experiment Station offered them help in this time of gloom, which they were prompt to accept. Every one who followed the instructions of the station was rewarded with bountiful crops, and soon felt themselves on the highroad to prosperity.

As season after season went by and the sprayed orchards produced good crops, other growers fell into line and obtained similar results.

About this time some of our shrewd, farseeing growers conceived the idea of forming a company to lease a lot of these neglected orchards and take an option on them for their purchase at the expiration of a five-year lease. All those orchards were taken over by the company and are now paying liberal dividends to the shareholders.

Apple growing in Illinois at the present time is a business that to succeed must be conducted on scientific principles. To grow first class winter apples one must spray from tree to five times, as weather conditions may require. As this spraying must be done at the same time that much of the spring work comes onto the general farmer, and the equipment necessary to the successful handling of the orchard and its product is very expensive, and of little or no value in any other line of farmwork, the apple business is rapidly going into the hands of men who like the work and are making it their speciality.

I will give a few examples of the specializing being done: Senator H. M. Dunlap of Savoy, Illinois, has one hundred twenty acres on his home farm from which he harvested in 1913 twenty thousand barrels of apples, besides several carloads of cider and evaporator stock. In addition to this he has under his control one thousand twenty-five acres of apple orchard belonging to the Illinois Orchard Company of which he is president and business manager. These were the neglected orchards referred to above, which were leased on five years trial and which proved so successful that they were bought at the expiration of the leases and became the property of the company. Under Senator Dunlap's management these orchards have paid for themselves, paid for up-to-date equipment for handling them, and are now paying fat dividends on the investment.

J. M. Tanner of Springfield, Ill., has two hundred-eighty acres of apples, thirty acres of peaches, and one hundred acres of pears in bear-

ing. Eighty acres of apples and thirty acres of peaches in young orchard. The year 1913 being an off year with his pear orchard and about half of his apples, he shipped only six carloads of pears, four thousand bushels of peaches and ten thousand barrels of apples. One four acre block produced six hundred barrels of apples.

Lest I make this paper too lengthy I will briefly mention some of the men and women who are making a speciality of the apple business and are making a success of it.

The Perrine Brothers of Centralia have two hundred acres, H. M. Simpson & Sons of Vincennes, Ind., own and successfully operate two hundred or more acres in Illinois. Messrs. Ringhausen, Motaz and many others of Calhoun county have each a large acreage. Guy Beauman of Tunnel Hill, Mrs. McEvoy of New Burnside and F. B. Hines of Ozark have about one hundred acres each. Mr. Poff and Mrs. J. F. Jolly of Olney, Lamar Bros. of Cobden, Casper Bros. of Anna, and many others over the south half of the state are all making good, and are enjoying many of the luxuries of life made possible by their orchards.

The apple man who succeeds in Illinois to-day must either know his business thoroughly or be able and willing to follow, without question or doubt, the instructions of some one who does know it. He must be a man who can work and live by faith and never figure the expense until the end of the season, for if he counts expenses he may become discouraged and throw up the job, quitting on the eve of success and losing out entirely.

While it is true that it is an expensive job to raise good apples in Illinois, it is also true that they pay an enormous profit and any man with ordinary intelligence, with get up and go in him, and a willingness to follow the instructions of the Horticultural department of the University of Illinois, can succeed in equal measure with any other line of agriculture.

As reference is so often made in this paper to southern Illinois, in speaking of our apple orchards, it might be well to explain that about nine tenths of the apples grown in the state are grown in the south half, on the clayhills and gray prairie land. The vegetables and small fruits grown for distant markets are mostly grown in the clay hills of the extreme southern part of the state.

HOW WE RAISE FRUIT IN IOWA.

WESLEY GREENE, Davenport.

The topic assigned to me by your secretary is an affirmative and descriptive proposition that we must condense to bring within the limits of the program, and by doing so we can only touch a few of the high places, and give you as it were, a bird's-eye view of the situation.

Before telling you how we grow fruit it may help you to understand the proposition if we indicate what fruits are grown and where cultivated.

The climatological conditions of Iowa are somewhat different from those in Wisconsin, being only remotely effected by lake temperatures or moisture. Geographically Iowa is situated between the two great rivers of the intercontinental region; it is 275 miles long east and west and about 200 miles wide north and south, and covers 55,000 square miles. Iowa is really a great hill, one thousand feet high with a slope so gradual that you are scarcely conscious of the ascent in crossing it. At Keokuk, the southeastern corner, the elevation is 494 feet above the Gulf of Mexico, at the southwest corner it is 918 feet, at the northwest corner it is 1350 feet, and at the northeast corner 648 feet so that on the whole the state has a southeast exposure. From the Minnesota line there is an elevated, wedge-shaped plateau 1200 to 1500 feet above the Gulf, extending south to the Missouri line, the northern half of which is quite level, known as the Wisconsin drift, and contains a number of small lakes.

The precipitation ranges from 28 inches in the northwest corner to 42 in the southeast, at Keokuk. About 15 per cent of the total area of the state was covered by forest trees, mostly confined to the eastern and southern parts. The planting of groves has increased this since settlement began to about one-seventh of the total area. Of the 200,000 farms in the state 150,000 are growing fruit; about one farm in four is without fruit. The average size of these orchards is about an acre. The farm orchard from a commercial view point is a problem not yet solved. Not more than twenty per cent of the trees in the farm orchards have been sprayed, and a very large part of the fruit in the unsprayed orchards is not marketable on account of the poor condition in which it is offered to the trade. If the farm orchard is to be a source of revenue in the future, better methods of culture and care must be introduced than prevail in them at present. The commercial orchard planted and taken care of in a systematic, business like manner is a profitable investment in Iowa. Since the first orchard was planted at Montrose by Louis Honore Tesson, an Indian trader in 1799, the Iowa orchardists have been testing varieties, but that phase of the problem is not so urgent now as formerly; the tendency now is to plant only a few of the best sorts, and to give these the care necessary to secure good results.

Strawberries are grown over the entire state commercially in a small way; matted rows four feet asunder, mulched with straw for winter protection and to keep the fruit clean, is the usual practice. Two crops are gathered before the plants are turned under, though some intensive growers still believe in the single crop rotation. Warfield and Senator Dunlap are the standard varieties. We have two experts in strawberry culture in the State who are working with the everbearing sorts, and you may hear more of these later, but they are not yet a commercial proposition on a large scale. Currants are a success throughout the state; also gooseberries, except the English or European sorts, which mildew badly and are not planted to any extent. The leading varieties are Houghton and Downing; perhaps you would substitute Pearl as an improved Downing.

Blackberries are an uncertain crop on account of drought at the fruiting season. Snyder is the standard variety for general planting, though more tender sorts are grown in the southeastern section. Black and Red raspberries receive considerable attention, are a little tender in the northwestern part. Older is the hardiest of the Black-caps, but poor in color. Kansas, Gregg and Cumberland, are leading sorts among the Black-caps. Culbert, Marlboro and Columbia or Columbian as some call it, are the red varieties. The red berries bring a higher price on the market but are not considered as profitable as the blackcaps; they are grown by hedgerow method. A few growers use a wire trellis for black-caps.

Grapes are grown over the southern two-thirds of the state, and do remarkably well on the loose bluff soils along the Missouri and Mississippi rivers. We have some excellent grape soil in Iowa and grape culture will in the near future be one of the leading fruit crops. Commercial varieties are Concord and Moore's Early.

Peaches are only grown commercially in the southern tier of counties and on the west along the river bluffs as far north as Council Bluffs, and on the east up to Davenport. On the northern limits are grown only hardy seedlings, that have very little commercial value except in the local markets. The Domestic and Japanese plums are confined nearly to the same district as the peach; the trees are a little more hardy, but the fruit is usually badly affected by fungous diseases that makes the crop an uncertain one for profit. The Americana plums are grown in all sections of the state, but do not ship well in large packages and as they are used only as culinary fruit the distant markets have not given a profit. If the plum industry is to increase, the fruit must be sold as a manufactural product to extend the time for distribution. De Soto and Wyant are the leading varieties in Iowa.

Sweet cherries are not a success. Sour cherries are planted as far north as Dubuque and Sioux City in commercial orchards. The varieties are Early Richmond and Montmorency. English Morello has suffered severely from fungous diseases the last ten years and there are not as many planted in recent years as formerly, though it extends the season for marketing cherries.

Pears have not done well with us; blight is the great enemy of the pear on our rich soils. When planted on the poorest clay-hills the

trees are better able to resist the disease than when growing in richer ground. We have a few commercial pear orchards in the south half of the state that give some encouragement to pear culture for profit.

The apple is the most important of the tree fruits. We have about 6,000,000 trees in bearing which yield from three to ten million bushels annually. This year the crop was about six million bushels, one-third of which was not marketed on account of poor quality. Two million were used locally and the other two million went into the general trade. The commercial orchardists are now putting their orchards on a paying basis. We have only a few large commercial orchards that exceed 160 acres in extent. At one time there was an orchard of over 900 acres, but it has long since been divided into smaller holdings. The standard varieties now include only a half dozen of the leading sorts. We have Yellow Transparent for first early on the local market or short shipment, for it is a tender variety that will not bear rough handling and Oldenburg for the early market. These two varieties are planted generally over most of the state. Wealthy is the market apple for the northern half of the state and Jonathan for the southern half. The Northwestern Greening has been planted largely in the northern half of the State to supplement the Wealthy and extend the season. In the south half a member of the Ben Davis family is planted on account of its commercial qualities:—size, color, productiveness, long keeping, and immunity from injury by rough handling. We have other varieties of merit such as Grimes, Stayman, York Imperial, Delicious, Fameuse, etc., for second and third choice to extend the season for harvesting the crop.

The essentials in the management of a commercial orchard are: Plant good healthy stock, cultivate well, and incidentally grow corn or hoed crops in the orchard to pay cost of cultivation; prune the trees to form low open heads to admit light and spray mixtures. The spraying should be thorough so that every part of the tree is covered with the mixture; not less than three applications should be given. The most important spray is the one given just before the bloom opens, and the next one as soon as the bloom is off, before the calyxes close. We have not found any fungicide that gives as good protection from the attacks of fungous diseases as Bordeaux, though lime-sulphur has many friends and has often given satisfactory results. Arsenate of lead is used almost exclusively to destroy insects which eat the foliage and fruit.

It will pay to thin fruit when more has set than the tree can bear or mature properly. The crop should be carefully picked, graded to size and color and put in clean packages.

Most of the apples are packed in barrels, though the box has come to stay, and the carton will soon find a place for fancy stock. The fruit grower who is thoroughly in earnest and puts into practice the best methods of *caring for* and *disposing of* his crops will receive an abundant reward for his labor. It is the careless fellow who loses his fruit on the market when the supply is greater than the demand for it. Good fruit will always sell at the highest price, *good enough—never*

leads to success—it must be the best. If your fruit is not the best on the market learn the reason why it is not, and prevent such a mistake in the future. The successful fruit grower always has more customers who want his fruit than he can supply. Be one of that kind and you do not need to “worry” about prices or a market.

EAT MINNESOTA APPLES.

PROF. R. S. MACKINTOSH, Minnesota.

“Eat Minnesota Apples” was the slogan we started for the purpose of calling attention to the fact that Minnesota was producing the finest quality of apples and that we want to interest the city folks in using them, so that the farmers would not have to use them in their rations for hogs. One man said he had fed a bushel of apples and a bushel of corn to his hogs, it was a “balanced ration.” This was a slogan started for the purpose of calling attention to the fact that Minnesota is now producing apples. We are not in the commercial apple industry at present, because we have been passing through the experimental stage, just the same as you have been, talking about the ever-bearing strawberry. Everything must go through an experimental stage. You must get some persons interested in the planting and growing of the fruit before you can put it on the map as a commercial product. We have had the ginseng industry developed, and I made the remark not long ago, that it is something like the Belgian hare. A man spoke up “Do you put those two in the same basket?” I said “No.” But in that region the cultivation of ginseng has been made a success. I have heard in other parts of very disastrous results to folks going into ginseng. So we must experiment through a series of years; some year frost may kill the ever-bearing strawberry and drought may in another, just the same as our spring bearing strawberries. It must go through the period of experimentation, just as the apple in Minnesota. In Minnesota we are on the map as producing apples in the home orchard. This fall I had the pleasure of riding about a thousand miles in an automobile in the western part of Minnesota, across the wide prairies and going in behind windbrakes, finding apple trees loaded with fruit. Folks were wrought up over the question of the blight, they did not know what it meant, so it was part of my duty to go around and tell our agricultural agents what the blight was. I went into an orchard where they had some trees and they had read in some of our papers or bulletins that blight should be cut out. One man sent his hired man to the orchard and he did cut out the blight, great big limbs as large as my arm were cut off, the last of July, or first of August, there was hardly a leaf left on those trees, and the poor wife was heartbroken. I tried to tell her as quietly as I could that they would have to wait until next spring to see whether the trees would survive the ordeal. We have such extreme

cases coming up and we have to be very careful in giving directions in caring for our trees. We are passing in Minnesota between the era of the commercial orchard as a distinct proposition from the home or farm orchard. We want to produce enough apples for our home use and we are doing it at present. The Minnesota State Horticultural Society is a "little" society; we have about three thousand members and we have a meeting just the same as you folks do. Last night you had your "best meeting" and so we had a "best" meeting by the woman's auxiliary in Minnesota. Some of the folks did not attend, but they found out afterwards that they missed a fine program. I should like to say for the benefit of the lady, who last night was discussing on this platform the subject of trying to distinguish between agriculture and horticulture, that it is very hard to separate one from the other, so you need not be afraid of teaching one or the other.

I want to say just a little about our educational work in Minnesota; it, I believe, stands at the head in many ways. We have, of course, the common school, district school, township school, and we are trying to consolidate as fast as we can, but one of the movements which has spread in Minnesota like wildfire, is the teaching of agriculture, home economics and manual training in our high schools. At the present time, we have one hundred and forty or more young men, college graduates, who are teaching agriculture in the high school. It is part of the regular curricula. The State gives from \$1800 to \$2500 to each of these schools depending upon the grade of work given. Now, we are going to hear from them in a few years to come because the graduates of our high schools are going to know something about the things surrounding them and not about things that happened ages in the past. We are finding out that the study of things surrounding us at the present time are the things we want to know, so that when our friend, Mr. Hill, criticises the school system, we can show that the folks know something about the things surrounding them.

Then we have, of course, the University of Minnesota, and a friend whom I was talking with last night wanted to know how many students we had up there. I presume it was to try to find out whether the University of Wisconsin had more students than the University of Minnesota. That is not the question. We want to know that we are doing something. Now, we in Minnesota have a College of Agriculture the same as you have and then we have agricultural, or we call them technological schools, or schools of six months each. Minnesota was the leader in starting this type of schools where the boys are collected during the six months of winter, or dormant period, giving them instructions as to why we farm in certain ways, then they go back to the farms. That school has been the forerunner of many others in this country. At the present time we have three of them. We are doing a large amount of work, as I mentioned a little while ago, in having county agricultural agents in counties in various parts of the State. We have twenty-three or twenty-four of them that are working at the

present time. These men have automobiles and they go from place to place assisting the farmers in doing work connected with their farms and it is surprising for one to know that just a little while ago in one section of the state, the West Central Development association had purchased over three carloads of alfalfa seed. That means something. Farmers are beginning to take notice that alfalfa and some of those crops must be worked into their farm operations.

I represent another branch of our educational system, the Agricultural Extension Service. We have a division which has charge of these County Agricultural agents, the Farmers' Institutes and our Extension service. We have at the present time, this week, four short courses in progress in this Extension work. It means work away from the campus and we have a carload of stock at three of these and the experts are at the present time talking to the farmers about the agricultural crops of their vicinity. We are doing a great deal in this work of stimulating the growing of acres of corn by the boys and the baking of bread by the girls.

Our Minnesota Horticultural Society is offering a great many prizes, \$1,000 for a winter apple, and it is now putting up prizes of \$600 for the best acre apple orchards. These are to be planted this spring under certain regulations and shall consist largely of Wealthy apples. The Wealthy apple, as you know, is a Minnesota product, so that Minnesota is on the map in that way, and if you are over there when there are plenty of apples, I hope you will eat Minnesota apples.

SOCIAL CENTERS FOR HORTICULTURISTS.

WM. TOOLE SR.

I have chosen to transpose the title of the subject assigned me, and have it read, Horticulturists for Social Center Work, for I believe the average horticulturist, because of temperament, training, association and environment, is pre-eminently fitted to promote social center work in rural districts, to aid in the formation of clubs or other societies, to help advance the rural life of various communities, to more sociable, enjoyable, and profitable conditions. We older members of the Wisconsin State Horticultural Society, have pleasant recollections of various local societies, which our state society has helped to establish, or sustain and strengthen. The present strength of our state society comes largely from localities where these local societies have existed. How many of these societies now exist we do not know because their connection with the state society is not kept up in any way, that gives an opportunity for knowledge of their present activities. Reports of their meetings in times past have shown that they were

occasions of social enjoyment, as well as promoters of better methods in horticultural operations, and home management. Their influence for good has not been altogether confined to strictly horticultural thought, and some of our most successful coöperative organizations have been an outgrowth of these earlier horticultural societies. It is probable that many of these societies have ceased to exist because they strove to confine their helpful activities within strictly horticultural lines of thought. There are but few neighborhood communities of size large enough to sustain an active rural organization with thoughts altogether centered on horticulture, and there are none which do not have a considerable interest in all the various influences, which concern the mutual welfare of the average rural community.

There is so much interest shown in rural social center work, and so much is written in its favor that it seems almost superfluous to offer any arguments in favor of the desirability of encouraging country residents to get together in a social helpful way for mutual enjoyment and profit. I think, however, it will not be out of place to give some thought to the good influences which we have seen resulting from well organized farmers clubs and kindred societies. Any club which has been really successful, and has established a permanent existence, has been controlled by certain lines of thought or policy. First we may mention, seeking for the best—the best that members know, the best that they can do, the best way to do things, and the best that should be done. Through this seeking for the best, neighbors know more of the good qualities of each other, and value each other more highly. From this better knowledge of each other is developed a greater inclination to coöperate for the good of all. Through the better acquaintance that is promoted by these clubs, neighborly interest and sympathy are increased and strengthened. The literary training given the members in calling for their best thoughts and knowledge, develops the abilities of the various individuals to express their thoughts in speech and writings. The bringing together of young and old of both sexes, which prevails in any well organized farmers club, develops a feeling of comradeship which adds much to the enjoyment of the community.

Members of newly organized clubs may have a feeling of a need for help from outside, but as soon as possible the custom should be established of doing things for ourselves and others, rather than having things done for us. It is well occasionally to have someone from outside to talk on some special subject, but we can and should depend largely on our own members to look up and present the various subjects which should come before the club for discussion. Not only will it be a surprise to the members of the club collectively, when they realize the amount of talent of the various members, but also in many cases the individuals themselves will be surprised on discovering their own abilities. The life of a club depends largely on its social features, but the strength and endurance depend on beneficial activities. There are so many good causes that may be helped by a rural club, that—"For the good of others"—should be a leading motive. There must be leaders in the social center work. It may as well be you. If you find a little senti-

ment in the neighborhood in favor of the movement, call a meeting of those interested and organize. Others will join as soon as they see that it succeeds. The first meeting may well be at some residence, and if the plan is acceptable to a majority, the club may continue to use the members homes as social centers. The Skillet Creek Farmers Club has held its meetings at the homes of members for more than eight years, and the members like the plan. Some clubs use the district schoolhouses as meeting places, but schoolhouses generally are not conveniently arranged for such gatherings. When clubs are very large a social center building becomes a necessity. In the town of Fairfield, Sauk county, the Klover Klub is uniting with the town in erecting a combined town hall and social center building. The Sauk Prairie Club makes use of the Sumpter Town Hall, and the Websters Prairie Club has fitted up a building for their meetings.

For the sake of being orthodox a constitution and by-laws should be adopted at the time of organization; but make them as simple as possible, for after the club has got well in motion the constitution will be scarcely thought of. Programs should be varied in character, but a general plan of meetings should be adopted.

The following is an outline of a recent meeting: Call to order, music, roll call, reading minutes of previous meeting, report of the canvassing committee on cooperative laundry, discussion, statement of necessary equipment for cooperative laundry, discussions, music, visiting intermission, music, report of the committee on securing electric light and power from the Wisconsin River Power Co., announcements, music, dismissal. Note the visiting intermission. We visit some when assembling and again at the close of the meeting, but for hearty joyful visiting you should share in one of our visiting intermissions. We never need refreshments to promote sociability yet we have refreshments occasionally. Our December 18 meeting was our annual corn show. Cake and candy also competed for premiums. A full program including visiting intermission was carried out, and to close there was a feast of cake and candy. A winter picnic will be enjoyed at a member's home this present month. The program of the meeting held January 2nd, was rendered by some of the pupils of three districts under the direction of one of the teachers. For several of the meetings to be held this winter, different members have been appointed to each plan a program and conduct a meeting. No two of these leaders is permitted to use the same person on a program. The officers of this club are a President, Vice President, Sec.-Treas., and two advisory members. These constitute the executive committee and have charge of the general plans of the club. It is aimed through committee work or taking part in programs for all to have some share of the clubs movements. Meetings are held every two weeks in the winter and monthly during the summer time. We have a picnic in summer of course and a strawberry festival and an ice cream social in season. The get-together spirit has increased in Sauk county during late years and it seemed desirable to organize a County Country Life association. This association brings together at its winter meetings

by delegate membership, Farmers Clubs, Literary Societies, Teachers Associations, Womens Circles, Coöperative Organizations, Rural Church and Sunday Schools, Old Settlers Societies, and the Bachelors Clubs. A director is chosen for each class of societies and they with the other officers constitute the executive committee. The attendance has been large at the winter convention and very large at the annual picnic. The next annual winter meeting will be in Baraboo on January 23 and 24. The following subjects will be considered; Farm Home Conveniences; Organized Coöperation in Sauk county; The Farmers Daughters; The Church and Rural Life; The Old Time District School; Present and Future of our Rural Schools; School Laws; Recreation in School and Home; White Grubs and Cut Worms; Alfalfa, A School Study; What the High School Should do For the Farmers Boy; The Farmers Interest in Good Government; Transportation from the Producer to the Consumer; Handling the Apple Crop. On Friday evening will be given a sample of class work of one of our country schools, and an address by Dean Russell. The next annual picnic will be at Devils Lake the last Saturday in July. The organization of this association has greatly promoted the extension of social center work.

CITY GARDENS.

MRS. L. E. REBER, Madison.

For many years the Woman's Club of Madison has been effectively interested in the introduction, in the city schools, of nature study, and that practical application of nature study, home and school gardening. About four years ago a department of the Club distributed penny packages of seeds in the Ward schools as an incentive to the making of home gardens and at this time Miss Martha Riley, then principal of the Lapham School, started Madison's first school garden.

The penny packets of flower and vegetable seeds distributed were too few for Madison's thousands of school children, but a small beginning was made in home gardening. The teachers reported that the work was worth while, flowers bloomed, they said, where except for the children's efforts there was no beauty in the surroundings. Instances were told of children whose only opportunity for gardening was in hard stony ground, who carried rich black loam from a considerable distance in little carts or in baskets in order to give their seeds the sort of soil "teacher" said they must have.

During the fall, school desks were decorated with flowers grown by the children and several exhibits of flowers and vegetables helped to stimulate interest. The planting, the growth, and the fruition were made the subject of essays in the English work of the pupils, with some valuable, some lovely, and some funny results. One small boy who had neglected to plant his seeds at all (possibly he was one of



A group of Madison "city gardens." This was tough June grass sod, 50 yrs. growth, just a few weeks before this picture was taken.



"Waste places made beautiful." Madison city gardens, 1913.

those who received no seeds) marked his essay "Imaginary" and wrote a minute description of his experiences, from the preparation of the soil to the proud day when he "carried large bouquets of fragrant sweet peas to sick friends and aged neighbors",—so realistic and accurate a little story as to prove, at least, that he had made good use of his ears.

No prizes were offered at this time and there was no regular supervision that followed the children to their homes, so in very many cases there was even less result from the effort than in that of the boy who used his ears to such good advantage.

On the other hand, the Lapham School garden may be looked upon as a more genuinely constructive step in the progress toward garden study and practice in connection with Madison schools. This was an example of a school garden on the school grounds. An unsightly and abandoned driveway was dressed with a top soil of good earth, supplied by the city, and on Arbor Day the children came to school in workday dress instead of holiday array, bringing with them such tools as they could.

Instead of reciting verses and reading essays about the beauties of nature and the joys of planting and reaping, they prepared the soil and each grade started the cultivation of a plot assigned to it. Here was a small school garden conducted under almost ideal conditions,—close to the school, supervised by the school teachers and so intimately related to the school work that its practice hours were adjusted as a part of the schedule. Here the tiniest as well as the largest children could garden safely and always under wise direction,—and this, of course, is as it should be since gardening is a form of Manual Training that may begin to advantage in the earliest grades. (Who does not love the story of the small girl, little more than a baby, who learned to sow seeds and tend them and who so valued the growing things that she carefully replanted the weeds pulled up by her mother, in the very nicest flower bed of all?)

Miss Riley found her school garden a valuable aid in many ways. There are always in every school a few children, sometimes more than a few, who seem to present an unsolvable problem but who can be reached through some form of outdoor activity. Often the playground supplies the clue and sometimes, perhaps frequently, the garden may. A majority of the Lapham school children were interested in and enjoyed their garden; a few of them discovered an occupation for which they cared more than for anything else. This I believe always happens in a well conducted school garden, and if there were no other value in gardening as a part of school work, this alone would recommend it, since boys and girls, especially if they leave school early, so easily drift into employment adapted neither to their abilities nor to their tastes.

I am spending much time in telling about Madison's first real experiment of this nature, for the reason that, though conditions may differ, much the same things may be said in general about all school gardens and speaking of general aspects of the problem brings us to

that most fundamental of all, the problem of money. It is probable that all public garden activity has been started with the handicap of limited funds. Lapham school garden was washed away in the course of a couple years, with its top dressing of good soil. Some day, perhaps, when there is more money, the old driveway, which is very stony ground, may be dug up and enough good soil supplied to make a permanent garden,—just for the littlest children and as a supplement to a larger and more practical garden, not far away, for the older boys and girls. By that time, let us hope, that the garden training both in practice and theory will have become a scheduled part of all school instruction.

A second time the following year, seeds (this time in larger quantities) were distributed in the schools. An effort was made to give illustrated lectures on methods of planting and results, showing of course some striking cases of yards before and after treatment.

The crowds too great for accommodation in an ordinary school-room, the blackness of the night that prevailed when the lantern refused to work, and the failure to bring out an audience when the entertainment was staged in a large central auditorium,—these and other experiences would make a story in themselves, and this story need not be dwelt upon, since, except in the most favored places, it is common experience. But, and I believe this also is common experience, the effort was not wholly lost. Many school children that year bought seeds in addition to those given them for home planting, and thousands of little home plots each bearing one or two varieties of flowers or vegetables were lovingly tended by children of all ages.

In the spring of 1912, a group of women, one a gardener, an enthusiast, who believes that in the garden lies the solution of many problems of health, of lowered cost of living and of happiness, (in happiness she includes good behavior) another woman whose study of the Madison schools had caused her to feel a keen interest in their progress, the president of the Woman's Club and several members of the Departments of Education and Social Service met to consider the feasibility of organizing a permanent garden association, for the purpose of furthering economic gardening for adults and garden training for children. Following this conference, ways and means were considered by a committee. One of the meetings brought together several experts in the organization and management of school and family gardens, also the Secretary and other members of the Associated Charities. It was learned from the experienced that there were at least three requisites, if the work were to become genuinely constructive, progressive, and permanent: namely, a definite organization; a trained supervisor, giving all of his time for at least six months of each year; and an assured income. These requirements seemed almost prohibitive.

In the meantime a circular letter had been sent to the officers of the social centers in each ward of the city with the result that offers of vacant land for garden use had been received, and two appeals had come in,—one for assistance in finding ground for and making a garden for Brayton School and one from the Secretary of the Associated Charities, who pled for an organization that would include in

its activities the promotion of family gardens as affording an opportunity of relief of the greatest value.

So rather to the surprise of all, it was decided to begin the work without at least one of the requisites, the paid supervisor.

The City Garden Association of Madison, was formed with an initial membership of eleven members, the dues being fixed at \$1.00 a year. The officers of this association during the first year were all women, and the membership grew to the number of 35, giving an assured income of \$35.00. The Woman's Club appropriated \$15. A small beginning, but the work was started.

The purposes of the association as formulated were to interest families in gardening, utilize vacant lots, establish school gardens, and organize ward improvement work. Although it was impossible to afford a supervisor for the work as a whole, University students taking the garden training could be employed by the hour, so it was decided to offer instruction to garden applicants as well as plots of ground prepared for use.

Beside the school children, roughly speaking, two classes of persons may be greatly benefited by this activity; the very poor who may need regeneration as well as relief, and a large number of families who do not garden because they have no land. During the first year, families from both classes were given the opportunity to garden. Families and children were enrolled under the supervision of Miss Blanchard Harper on land just on the edge of the city. These were serviceable plots 45 x 45 and 45 x 60 and the harvests were large. Miss Harper taught those who needed this instruction how to preserve and store vegetables for the winter, and quantities of products were used in this way.

Eight families worked under a paid instructor who met his people after work hours and on Saturdays. For families of the one class, the very poor, the instruction was an important factor. It insured regular attention to the work and profitable gardening. The young man who gave this instruction knew how to reach his pupils—met them on a friendly basis, showed them that he could give them something, yet took off his coat and dug or hoed like any other man. When his families failed to appear at the gardening hour he went and got them.

One man, with a family of seven children, a frequenter of saloons, gardened with his wife and older children, raising most of their summer food and additional tomatoes, beans, and cucumbers which the wife preserved. Through the summer and fall he kept out of the saloon, but in the winter the old habit again conquered him.

As a rule, families of the second class do not require regular instruction as do the first, but even with them a trained instructor may be of service in showing methods of intensive gardening by which a small plot will yield a large crop.

Twelve school gardens were made by the Brayton school children, each child growing a half dozen vegetables, learning all the processes of planting, cultivation, and harvesting, with many related lessons, and carrying home the products of his work. The children were enrolled by the principal of the school and a waiting list was made for

use in case of failure of any of the beginners. When vacation came with hot days, there was some difficulty in holding the class together and it was necessary to substitute from the waiting list for three delinquents. Except when the garden work is regularly scheduled as part of the school curriculum, the waiting list is almost a necessity. The interest of the children, the desire of the parents, the incentive that comes with competition, and the waiting list—these are the weapons the instructor must use vigorously to hold his class together as soon as the many distractions of vacation life begin to be felt.

Before the opening of the following season a more stable organization had been effected for the City Garden Association, a constitution adopted, a board of directors elected and a new president chosen, a man, one of a number of real estate men who had become interested in this work. During this year, 1913, eighty school garden plots were cultivated under the supervision of the City Garden Association and thirty-four University garden plots afforded a like opportunity to as many children. Including with these the boys and girls of school age who gardened with their families gives a total of 125 children who had the advantage of garden training during that season.

Needless to say, this work was not accomplished without the hearty coöperation and assistance of the Superintendent of schools and the approval of the School Board.

The membership of the Garden Association was increased during the year to about one hundred and sixty, thus giving an assured income of \$160.00, from dues. A real estate company gave the use of a large tract of land and the sum of \$50.00 to help along so good a cause. One seed firm presented \$40.00 to the work. A Savings, Loan and Trust company offered \$100.00 in savings accounts as prizes to the school gardeners. A number of real estate men found ground for garden use and other dealers contributed by giving special rates.

During this year, the sum of \$300.00 was expended for plowing, fertilizing, instruction, and the purchase of seeds.

The school garden plots were large enough to yield a crop that would supply the greater part or all of the family vegetables. A border of flowers, in this case poppies, nasturtiums, and candytuft, was required. The following vegetables were planted according to the same plan in every lot,—beans, peas, onions, beets, carrots, lettuce, spinach, radishes, cucumbers, potatoes, corn, squash, and tomatoes.

It is unfortunate to express the value of the returns in terms of money, but it is one way of praising gardens to tell what a little work and thought plus soil and seed are worth in dollars and cents. A moderate estimate has placed the sum for 1913 at \$1,000.00. Under the direction of a man giving his entire time to the work this sum should be considerably increased for the same number of gardens.

Many things are said in praise of Madison's school gardens in other terms than those of money—it is pleasant to record the following:

Miss Riley, former Superintendent of Lapham School, now truant officer, says: "The work has shown that well organized and supervised gardens will go a long way toward solving the problem of juvenile delinquency during the long summer vacations."

A school principal who kept in close touch with the young gardeners from her school tells of one boy who was lazy and unruly in school who loved his garden work, made good in it, and helped the little fellows. She cites three other cases of "problem" boys who were clearly better, boys for having this opening for work they enjoyed. She points out especially the community of interest that grew up in this little garden group and their friendly feeling and pride not only in their own but in their companions' achievements.

The business men in a district in which a school garden group was situated report that nothing has ever been done in their part of the city that so raised the standard of the boys as the school gardens.

Residents of another district find the children decidedly more orderly and well behaved when their leisure summer hours are occupied in gardening.

Of the family work in 1913, one case at least, should be described, that of a widowed mother with three children and an old dependent relative. This mother has two boys under twelve years of age. For the sake of wholesome summer work for these boys, and as a source of income, she planted a garden. With the help of her boys, she raised vegetables for her family of five and sold produce to the amount of \$80.00 and her winter's supply. Similar results, but on a smaller scale, were secured by other families.

As has already been explained, the instructors employed by the City Garden Association have been selected from University students who have taught in the state and come back to study garden work. Communities without this or some equivalent resource could, with little expense, send one or more of their teachers to take the garden work of the University Summer School and by this means, even the smaller communities might secure trained instructors in a very good place, the school. Without an instructor who really knows how to teach gardening, the work at best, will be superficial and fragmentary.

The great fault of a system of gardening that is not controlled by the school is that it must be recruited by volunteers and does not benefit the entire body of pupils. With a garden supervisor and co-operation between school and garden management, the next best thing to gardening as an organic part of the school work might be secured. The establishment of demonstration gardens in every ward with classes scheduled to visit, inspect, and listen to explanations should greatly stimulate serviceable home gardening. The results obtained in such home work might be given credit both by the school and the garden management. During the coming spring the experiment will be tried of demonstrating in the schools the planting and care of seedlings.

An effort at ward improvement was started by Miss Melissa Brown, a member of the Garden Association, who reports as follows:

"The Tenth Ward Association was organized primarily in order to interest the children in utilizing their backyards as garden spots, in working for a cleaner ward, by keeping papers picked up from the streets and around their homes, and in cutting the weeds. Also as far as possible to interest owners of vacant lots in keeping the weeds

cut. An unsightly plot of ground at the junction of Spooner and Monroe Streets was cleaned up by the Boy Scouts. They removed old barrels, rubbish, etc. making a neat little park of evergreens around a drinking fountain. Through the efforts of the Association the triangle at the entrance to Wingra Park that had long been used as a dumping ground for all kinds of refuse, was filled in and seeded down and a promise is given by the Madison Park and Pleasure Drive Association that this plot shall be planted with shrubs and flowers the coming season.

An attempt is to be made next year to remove the telegraph poles back from Spooner street near the viaduct, and to plant trees and shrubs along the railroad right-of-way, from the viaduct to the triangle making a beautiful parkway between Wingra Park and University Heights.

Last spring a generous lot of seeds was donated by a seed store for the use of the children of Tenth Ward. An effort was made to have the gardens inspected at stated intervals by several boys ranging in ages from sixteen to twenty.

Late in summer, the Tenth Ward children were asked to exhibit from their gardens in connection with the City Garden Association proper, the exhibit to be held at Vilas Park; they had not had this in view from the beginning and many of the vegetables had been used before the proposition was made, nevertheless, a few brought very creditable exhibits.

Many children who saw the display were enthusiastic in their determination to have gardens next year.

In passing, we would mention two boys who sold over \$50.00 worth of truck from their garden, although they had only a small plot besides the back yard." So much for the Tenth Ward. Similar work will be organized in other wards as rapidly as possible.

The exhibit at Vilas Park mentioned by Miss Brown, gave a successful termination to the season's work. Contributions came from children's gardens from all parts of the city, and made a surprisingly good display. This was shown on Labor Day, the little school gardener's gala day, as it was then that they were taken in gaily decorated cars to inspect each other's gardens and finally to see their own exhibit under the trees of beautiful Vilas Park. Here the prizes were distributed for the best group of gardens and for the best gardens in each group, and an ice cream treat always acceptable to boys and girls was the more grateful because the day was hot and cloudless. Every gardener wore a gold-colored badge and radiated pride and pleasure in his or her summer's achievement and its happy end.

THE COMING GENERATION.

CAROLINE TRUMPF.

A few weeks ago I was asked to tell you something about the work we are doing in the country school in Agriculture, and if I thought the same kind of work could be done in Horticulture. Since the two subjects are so closely related, it is rather difficult to say where Agriculture begins and Horticulture leaves off; and I must confess that we teach Horticulture many times under the disguise of Agriculture.

Agriculture like all the other subjects of the curriculum has become so broad that I will only take up a few things we dwell upon during a school year.

The first subject we usually consider in the fall of the year is the study of the different kinds of weeds,—first, noxious and others that grow in our community. My reason for taking up weeds FIRST is because their eradication is of vital importance and can be applied to nearly every subject discussed in Agriculture that follows later. We do not study the weed that grows and blossoms in our textbooks, but we get right out into the fields surrounding our school and study the ones we find there, such as quack grass, rag weed, yellow dock, burdock, fireweed, Russian thistle, pepper grass etc. As the different types are gathered, we learn their names and bring them back to the school where we study the general character and appearance of each weed. All the samples of weeds that are gathered are *preserved* and referred to as our study of the subject continues. After the seeds mature we gather seeds of all kinds of weeds and place them in labeled bottles for future use. By the time we complete the study of weeds the pupils manifest a great deal of interest in a plant very common in their own community which they had never even noticed before. Then we are ready for the most important subject of all,—The eradication of all common and noxious weeds. Perhaps here the students show the greatest interest because here they come in contact with something that has already been experienced by them. A good many *well* remember the mornings they have spent weeding onion beds or hoeing corn when it would have been more to their liking to have played "Hide and Seek" or "Pump, Pump, Pull Away". We spend extra time on the study of the three most harmful weeds in Wisconsin, such as quack grass, Canada thistle, and wild mustard. Many times for opening exercises we have speed contests in calling out the different names of the weeds as each variety is pointed at. This stimulates their familiarity with the pests of the garden and field.

Soon after the study of weeds we take up the study of corn. About the first of October is an excellent time to study corn, because then it is mature and we have a good opportunity to consider the plant as a whole. This work is also done out in the field, and there we take up such matters as these: Why the plant should have a medium sized

leafy stalk, good root development, and different kinds of roots, such as brace roots and feeding roots; why the corn should be mature, and why the ears should be cylindrical shaped, the kernels run in straight rows with the butts and tips well filled. The color of the corn and the length of the ear are also not forgotten.

Last fall when the corn was fully mature, we got the consent of one of the farmers to let us gather some of his seed corn for him, and I can assure you the girls and boys were very careful to examine the stalk, leaves, ears, and roots before they chose the seed ear. After the corn had been gathered we took it into the schoolhouse and put it on seed corn racks to dry. In the Spring we tested it, using the individual ear test. By so doing we could determine which ears were germinating and which were not. After the corn was tested we shelled it and returned it to the farmer to plant. The report of that corn from the farmer was that he had never had such good corn before.

Of the many other subjects that we discuss in Agriculture I want to say a little about alfalfa, the "Queen" of all clovers and all other grass plants. Alfalfa is the most palatable and most nutritious of all hay crops and has the greatest yield per acre. When we took up the study of clover and grasses, our bulletin told us that clay loam soil was the best adapted for the growing of alfalfa, and that it would not thrive very well if there was any acid in the soil. So we set to work to see if the farms around our school could grow alfalfa to advantage. We used litmus paper in our experiment to detect acidity and found that nearly all the soil contained acid. As soon as we discovered these conditions we corrected or neutralized samples of this soil with air slacked lime or lime stone. Two or three tons of air-slacked lime per acre is a fair application. All of the pupils took litmus paper home with them and tested the soil on their fathers' farms. They corrected many samples of this soil.

Sometimes in addition to the neutralization it is necessary to inoculate the soil, and when this is done we turn our attention to the seed. Of course we always want the best seed. Some one was kind enough to inform us that any farmer could secure the best if he belonged to the "Wisconsin Alfalfa Order." By belonging to this order he could send to the College of Agriculture and be certain of getting pure seed. I have been told by my pupils that their fathers are going to try a field of alfalfa next spring, and the boys with their fathers are going to follow directions as they learned them at school. This indicates that the boy's interests are with the farm.

Perhaps in the study of corn and alfalfa my students evinced greater enthusiasm and a more animated spirit than in any other study. They always show a kindred feeling towards everything in nature and especially towards the things in their own community. Moreover they are not exceptional children in any way. They are just a good type of country boys and girls. Why, just a few weeks ago Superintendent Davies of Sauk county invited my seventh Grade class of boys to give an *exercise* in Agriculture before an institute assembly at Baraboo. Mr. Davies had scarcely closed the door when

one little fellow all excited asked, "Teacher, where will we get our dinner?"

Besides enjoying the study of crops, these country boys and girls love to test milk with the Babcock Milk Tester. Each pupil brings samples of milk from some particular cow and we test the milk at school. This work shows the pupils which cow on their farm is a boarder and which one is really bringing money into their pockets. Several "boarder" cows have already been sold on account of insufficient fat in their milk.

In a very inefficient way I have told you about a few things that are being done in our country schools to-day in Agriculture; and I firmly believe that the same things can be done in Horticulture. In fact I know they can be done. I am a strong advocate of teaching Horticulture in those communities in Wisconsin that are adapted for the growing of apples, fruits, or garden products.

The coming generation ought to be taught that there should be a farm orchard consisting of home fruit and fruit for the market; then, too, they ought to know how to take care of that orchard. Although we have not made any special attempts to study Horticulture in my school, my pupils readily appreciate the fact that the codling moth and the apple curculio injure or destroy three fourths or \$250,000 worth of the apple crop in Wisconsin each year. This subject can be made as interesting and vital as any subject in Agriculture. For instance, one day in class, while we were studying the different varieties of apples that are adapted to our portion of Wisconsin, namely—the Duchess, Astrachan, Golden Russet, North Western Greening, Talman Sweet, Fameuse,—we cut into halves an apple of the Fameuse variety and found an apple worm, the codling moth, comfortably lodged within the core. Then the history of the codling moth was traced in a simple way like this: The adult moth usually lays her eggs on the leaves, and when they hatch the young larva eats its way into the fruit. It feeds inside the apple until full grown when it emerges from the fruit, finds a sheltered place either on the tree or ground, spins a cocoon, and enters upon the inactive stage. It remains in this stage for about twenty days, when the adult moth appears and lays eggs for a second generation. It is the larva of the second generation which is so frequently found in apples during the winter months. The greater portion of the first brood enter the fruit through the calyx or flower end, while a much smaller proportion of the second finds its way into the apple at this point. This little story was even readily grasped by the fourth Graders as they watched Mr. Codling Moth crawl around on a sheet of white paper.

As the study of the eradication of weeds followed naturally the study of weeds, so did the remedies for the codling moth follow the study of the moth. This took us into something entirely new—spraying. I shall not tell in detail about our study of spraying except to emphasize the fact which was emphasized in our classroom, that a wise farmer sprays his orchard as soon as the larva is hatched and before it gets to the apple. One pound of Paris Green to 150 to 200 gallons of water is the proper proportion for the poison solution.

In rural schools where Horticulture ought to have as much attention as any other subject, and where Horticulture WILL have the utmost attention in five or ten years, much might be taught about the plum curculio which is a close rival to the codling moth in the extent of the damage it inflicts upon the fruit grower. Its depredations are not confined to the plum, but it destroys large numbers of apples and cherries as well. The curculio is a snout beetle and lays its eggs in the fruit just beneath the skin. If the egg hatches the young larva burrows into the fruit, eats out the inner portions and fills the interior with excrement. In case of plums a majority of the fruit falls from the tree prematurely. Cherries attacked by the curculio usually remain on the tree.

Much might also be said about the cherry maggot, currant lice and currant saw-fly, strawberry leaf roller and the strawberry root louse and many others not quite so common as those already mentioned.

When it comes to the elimination of these pests the birds should not be lost sight of. If our country boys and girls could only be made to realize that the protection of birds meant preservation of fruit, the Horticulturist's problem would soon be solved. The birds eat millions of insects every year and all farmers should regard them as their very best friends. Longfellow tells us a story in one of his poems of how the Town Council in a New England town decided to kill the birds. He describes the place after the birds were gone:

"The summer came and all the birds were dead;
The days were like hot coals; the very ground was burned to ashes;
In the orchards fed
Myriads of caterpillars, and around
The cultivated fields and garden beds
Hosts of devouring insects crawled and found
No foe to check their march, till they had made
The land a desert without leaf or shade."

But then he tells us that the birds were brought again from the country round and he says,

"Think every morning when the sun peeps through
The dim, leaf-latticed windows of the grove
How jubilant the happy birds renew
Their old melodious madrigals of love!
And when you think of this remember too
'Tis always morning somewhere, and above
The awakening continents from shore to shore
Somewhere the birds are singing ever more."

And so way down the ages we find poets singing their praises to the birds, orchards, the gardens, and the flowers. Even Thoreau, who was one of the three great Transcendentalists, had time to turn aside from his high thinking and plain living and write an essay on "Wild Apples". Nor can we forget John Burroughs, whose name will stand out in the annals of history as being the greatest naturalist of his time. He enjoys writing us in his thatched cabin at Sunnyside, New



The 1913 prize winners, Madison city gardens.



**Exhibits of flowers and vegetables from Madison city gardens,
Labor Day 1913.**

York, how they used to store for the winter bushels of apples in the ground, where the apples received a flavor which could not be secured in any other way.

Many a lesson in Horticulture might be taught from classical literature, natural history, geography, and arithmetic even; and when there's a language lesson to be written it would be advantageous and profitable to have it written on some garden plant, fruit or flower.

When *this* new subject finds its way into the curriculum of the country school of Wisconsin, I can see a future for Horticulture with gardens filled with verdant plants, the orchard trees loaded with delicious fruit, the vineyards filled with clusters of purple grapes, singing birds in the air, and a Horticultural Society second to none in the United States.

HOME AND SCHOOL GARDENS OF EAU CLAIRE.

MRS. A. H. SHOEMAKER.

I have been asked to tell the story of the Eau Claire Home and School Gardens, and it is a pleasure to do so. It is a simple story, yet to those of us who have watched the plan develop, it is a most interesting one.

Six years ago the Home and School Gardens were started in Eau Claire, under the direction of the superintendent of schools and the teachers. At that time there were just a few small gardens; but the interest has widened, and distributed itself very equally over the ten wards of the city, and last summer there was a record kept of 976 gardens. The garden may be only a tiny bit of land, a bed of flowers or vegetables; but the child takes it for his own, to cultivate, to plant and to harvest. The teacher keeps a record of it; of its exact dimensions, its location, and the things that are to be raised in it.

A small daughter in my family has given me a near view of some of these gardens, and the interest shown by many of the children is remarkable. It is something that appeals to most of them; they love to see things grow,—and who does not—they love the feeling of absolute ownership, of possession. One of the great questions of the early spring in our family is just where the school garden is to be; how many feet and inches it is to be made, and just what crop is to be raised in it. Until those things are settled, spring house cleaning and spring sewing must remain in the background; and we are further warned, that when the things begin to grow, we must not water it or help pull the weeds, for in that case, it would not be all hers.

Early in February of each year, it is the plan of Mr. W. H. Shultz our superintendent of schools, to send out to teachers and pupils, circulars relating to the gardens which help to arouse interest and enthusiasm for the approaching garden season. This circular contains

information on matters of soil, the best and easiest crops to be grown in the locality, and suggestions in matters of simple horticulture.

As a rule, the pupils furnish the seeds for their own gardens. If they have more than they need, they take them to their teachers, who pass them on to any who ask for them. Last year the Woman's Club made an appropriation to purchase seeds or young plants for the gardens. The School Garden Association of Boston furnished us with penny packages of seeds which were used with good results.

As far as possible, the children have their gardens at home; but when there is no suitable space at home, they are given some vacant lot as near by as possible. Sometimes a vacant lot is divided among several children, who cultivate it side by side, and carry on their work without any particular difficulty or disorder. In this practical way they learn to respect each other's rights, and only a few cases of trespass have occurred.

What an improvement it would be, if all the unsightly vacant lots in your town and mine, could be cleaned up and made to blossom with cucumber and tomato vines and beds of some of the old-fashioned flowers which are so easy to cultivate; and there are children enough too in every town who would gladly do it—they are only waiting for some one to organize and direct the work.

A prominent feature of the garden work in Eau Claire is the exhibit which is held in each school building in the early fall, and at which the finest products from the gardens are displayed to the public. Exhibit Day is a great day with the children. The school becomes a little county fair. The biggest pumpkins and squashes, the finest tomatoes, the choicest flowers are all there and to each exhibit is attached the name of the proud producer. It is a happy time and the only aristocrat that day is the one who owns the finest exhibit, all grown by the sweat of his brow, and the work of his hands. It is a wholesome lesson in democracy and a live "Back to the Soil" movement.

The ladies of the First Presbyterian Church at Eau Claire are pushing along the garden idea by giving seeds to the children of the Sunday School who wish for them, and an annual flower show is held in the church in September at which the flowers thus grown are shown to the public. Blue and white ribbon premiums are placed upon the best exhibits by competent judges.

Another work worthy of mention is that done by one of our ward schools upon a certain portion of our river bank. It was a most unsightly place when the children began work upon it; having been used as a dumping ground for refuse of various kinds.

This school under the direction of the same teacher has taken care of it for the last seven years, planting elms, willows, evergreens, vines and flowers. It is now a beauty spot, and dear to the heart of every child who helped to make it so.

There is a financial side to this matter which has not yet been emphasized in our town. What is the money value of these 976 gardens? As yet no complete record has been kept. The products have been used largely to supply the home table, and only the surplus has been sold. But even this has been considerable and quite an

amount. The earliest and finest home grown radishes that came to our table last summer, were brought to our door by a little ten year old boy, who proudly told me that he raised them all himself in his school garden, but that he let his mother help tie the bunches. Later tender young onions and delicious peas came to us from the same little garden.

It has been suggested that the coming summer, report blanks be distributed among the young gardeners, and a financial report asked for, which would approximate the commercial value of our gardens.

However, there is one garden of which I may speak with a personal knowledge, as it was situated in our ward. It occupied two good sized vacant lots, and was cultivated by two high school boys, who shared equally in both work and profit. It was planted to corn, cucumbers and tomatoes, but corn was the principal crop raised. They harvested their corn crop, delivered it to the canning factory, keeping a record of every transaction. At the end of the season they had almost one hundred dollars to divide between them.

It has been said that "it is a great thing to make two blades of grass grow where only one grew before". What then shall be said of the boys and girls who take a vacant city lot, and make corn and cucumbers grow where only weeds and tin cans grew before?

SHEBOYGAN CHILDREN'S GARDENS.

MARIE C. KOHLER, Sheboygan.

Sheboygan was asked to send a delegate to the Horticultural Convention at Madison, and Mr. Palmer, of the Longfellow School, was ready to report on Children's Gardens when, on the very day of his departure, a telegram was received from the secretary saying, "We want a woman, not a man." Having been a judge in the Children's Garden contest last summer, this honor was delegated to me, and I gladly accepted.

Mr. Palmer, Principal of the Longfellow School, and forerunner of the garden movement in Sheboygan, in the spring of 1909, planned a garden contest to be held the following fall. Through the courtesy of Mr. Matthewson, our florist, seeds were furnished the children of the school at a penny a package. A choice of four varieties was given:—Nasturtiums, Asters, Verbenas, and Ten Weeks Stock. About 350 pupils took from 1 to 5 packages each. The gardens were made at their own homes, and the third Friday after the opening of school in the fall, a flower show was held in the school, at which time all pupils who had raised flowers competed. The various rooms were also decorated, and prizes awarded to the 1st, 2nd, and 3rd best appearing rooms.

The prizes this year were donated by the business firms of the city and consisted of many toys and articles of use ranging from a top to a \$10.00 bank account.

During the day devoted to the show each desk had its bouquet of flowers; this created an interest among the pupils not eligible to the prizes, and, at the same time, added to the attractiveness of the exhibit.

A special invitation was sent to parents to visit the school on the day of the flower show, which had the advantage of bringing the parents and teachers together early in the school year. So successful was the show that two have since been held with some changes, the boys have raised and exhibited vegetables instead of flowers, and honors have been substituted for prizes. In each of the contests 50 per cent of the pupils enrolled in the school have taken part. It has been a stimulus to nature work, has brought parent and teacher together and the school and community have been bettered by the effort. The grounds of Mr. Palmer's school, the Longfellow school, by an artistic arrangement of trees, flowers and shrubs, has been made one of the most attractive in the city.

Early in the spring of 1913 a plan, wider in scope and intending to embrace the entire city, was proposed by the Advisory Committee of the Associated Charities.

A meeting of the members of the Advisory Board, and representatives of the Mothers' Clubs and Parents-Teachers' Associations, was held, and the following rules which were to govern the contest drawn up:

CHILDREN'S
GARDEN COMPETITION
OF SHEBOYGAN

Directed by
THE ASSOCIATED CHARITIES.

RULES.

1. Any boy or girl under the age of 15 years may enter this competition. Registration must be made in person at the office of the Associated Charities, 721 Ontario Avenue.
2. Each competitor will be placed upon his or her honor as to the assistance given during the season.
3. Ground space to be 100 square feet, arranged to best suit the yard or garden. (Paths between seed beds not to be counted).
4. Competitors are to select either a vegetable, or a flower garden. The flowers may be in two or more beds to suit the yard.
5. Vegetable garden to consist of Beets, Carrots, Winter Onions, Irish Potatoes, and Popcorn. Flower garden to consist of Zinnias, Nasturtiums, Stocks, Asters, and Marigolds. Seeds will be furnished at time of registration. (No other seeds to be used).
6. Monthly prizes, to be announced later, will be given during the months of June, July and August. These prizes will be awarded by judges appointed by the Associated Charities, the following points to be considered:

- a Age of competitor, and previous knowledge of gardening.
 - b Physical condition, and other employment.
 - c Grade of garden soil, location in yard for sunshine and water supply.
 - d Care of surrounding ground.
 - e State of garden at time of inspection.
7. Final prizes given for best exhibit of both vegetables and flowers in September are as follows:

Vegetable garden, 1st, \$5.00; 2nd, \$3.00; 3rd, \$2.00; 4th, \$1.00; 5th, \$1.00.

Flower garden, 1st, \$5.00; 2nd, \$3.00; 3rd, \$2.00; 4th, \$1.00; 5th, \$1.00.

If there is not the required ground space in the home yard, other ground available may be used.

The surrounding space should have attention. Unsightly places may be covered with vines such as morning glories, wild cucumbers, hops, gourds, squash, or pumpkins. Giant sunflowers and the castor bean will be excellent for screening old buildings, etc.

The rules were printed on sheets of blue paper, and distributed to the children in the city schools, to take home. At the same time all were asked to fill out the following registration blanks:

Kind.	Registration Blank.	Date.
Name		
Address		
School		
Age		
Knowledge of gardening.....		
Location of garden		
Use of city water		
Help given		

Only 165 competed, and these were in the outlying districts. The first inspection of the gardens took place the latter part of June and early in July. Prizes consisted of 3 pictures, and a table book-rack donated by local merchants.

With the first inspection gardens not planted according to instructions and those badly neglected were thrown out of the list. The children did not know when the judges would appear, and the frequent rains which had served to keep their gardens well watered had also caused much damage.

Two little boys looking for all the world like Brigg's cartoon in the Chicago Tribune of—"When a Feller Needs a Friend," gazed ruefully at a hillside, and remarked: "Our flowers all swum away on us."

While a little Holland girl in whose garden weeds and flowers struggled for supremacy, informed us that she didn't know the difference between American flowers and weeds. One of the judges, the rector of the Episcopal Church, who has a quaint English garden,

and a genuine love for flowers and children, got down on his knees and showed her the difference, by weeding the entire garden.

Some gardens were beautifully free from weeds and as regularly planted as though a tape measure had been used in laying them out. Two little maids who were away fishing when the judges arrived had gardens as wonderfully alike as two peas. Some of the children were handicapped in that they carried papers, worked in stores or in the pea factory. All this was made note of in the inspection. Most of the parents were much interested in their children's efforts and were eager to answer questions. One mother slipped her arm through mine, and invited me into the gooseberry patch, assuring me that, "Willy done it all alone, only his pa helped him."

Quite pathetic was the attempt of a little Polish girl with an unpronounceable name, to have a garden. In an ugly plot of ground overlooking the railroad tracks, she had planted her garden and over it had suspended on 4 sticks a bit of rag carpet to protect her flowers from the rays of the sun. Amid the most sordid surroundings she struggled towards something better and higher.

As 80 gardens were thrown out after the first inspection, only 85 competed in the next contest which was held the beginning of August. Prizes were donated by the merchants.

The very late spring prevented a third inspection and the contest closed with an exhibit of the flowers and vegetables raised by those children of the 85 keeping up their gardens throughout the season.

Through the kindness of the H. C. Prang Co. the exhibit was held on the second floor of the New Store Building, September 19th. There was a very hard wind and rain storm early in the morning, which prevented the children from getting down, and the entries of flowers were but 16, and many of these spoiled by the hard rain. 30 children brought in vegetables.

I struggled over in the afternoon in a driving rain to look at the exhibit. There were some very artistic bouquets; others were stiff pyramidal affairs like the ones we presented to our grandmothers on their birthdays. The vegetables clean, large and sound could have competed with any shown at our county fairs.

One little maid had made a case, had lined it with wallpaper like the top of an old-fashioned trunk, and each compartment contained a different vegetable. \$22.00 was awarded in cash prizes, the money having been given by the Societies of the Advisory Committee of the Associated Charities, and the Mother's Clubs of the schools.

In making their decisions, the judges considered the age of the child, the condition of the garden during the summer when the inspections were made, the interest the child took, the probability of aid given, and the exhibit itself. The vegetables exhibited were given by the children to the Home for the Friendless.

A plan was suggested to have a city market twice a week, near the center of the city, under supervision of a committee, where the children could bring their fruits and vegetables and sell them, but it was not considered feasible last summer and it is quite too early

in the year to say what will be done this summer. However, we are hoping for such.

Prof. Charles Zueblin, of Boston, who lectured here on the Twentieth Century City has gotten the business men interested, and with them, the Mother's Clubs and all the school children enlisted in our cause, what cannot we expect?

Trying as it was to be whirled about to 29 gardens in one afternoon, and to be seeing gardens all night, yet I consider my two afternoons spent in inspecting gardens among the most enjoyable days of last summer. And when one despairs of the present day child, whose sole diversion seems to be the moving-picture show, one ought to ask to be permitted to serve on a children's garden committee, and his faith will be restored.

FACTS AND FANCIES ABOUT GARDENS.

ANNA A. IHRIG, Oshkosh.

Have you a garden? Many of you I know are market gardeners. Most of you have gardens that supply your home with vegetables, fruit and flowers. But the garden I wish to talk about is different. We will call it the garden wonderful. It must possess the element of wonder. Our market and home gardens in which we grow the same things year after year lose some of their first wonderfulness and become quite prosaic. But there is yet a corner where the wonders grow. We hear the vegetable gardeners say "I wonder" and straightway he goes and plants a few billion dollar potatoes or Buckstaff tomatoes in his wonder garden. The small fruit grower's wonder garden contains superb ever-bearing strawberries and wonder berries. The orchardist has a choice site where he plants piece roots and whole roots and own roots and crab roots and tries out the improved methods of spraying and pruning. The housewife plants a packet of chard or salsify or some vegetable new to her and the flower lover is always seeking new wonders. Thus we see that all gardens have their wonder side, but the garden wonderful belongs to the children.

Garden making appeals to all normal children. They like to play in the dirt, and they like the element of wonder and uncertainty. If you add to this the joy of possession, few children but will meet you half way. The joy of possession, is responsible for the added dignity and wisdom that we perceive in our minister and our doctor. Our dog, our breed of cattle or fowls are superior to others, because of this joy of possession. Our society, our locality, our Wisconsin are all dependent on the joy of possession for much of their interest. So with the child, the joy of possession and the appeal of the wonderful, attract him immediately, and as his in-

terest in gardening grows he grows with it physically, mentally, and morally stronger. The children's garden movement is surely worthy of our support. I am glad that gardens have been my life long associates. In memory, I stand, a little child in my Grandmother's garden and hear her say as she culls a bouquet for me, "Tell your mother the red rose is from the bush that "Mrs." Cowling gave me."

Again, as a young girl I gather the white lilacs and snowballs in the home garden, and later transplanted to my very own garden the old and the new favorites. There my sons and my daughters have gathered the rosies and posies, for themselves and their friends, and now a little golden haired girlie of two summers helps Grandma pick the pansies. The garden is an infinite resource to us all. It responds to our mood, comforts us in sorrow, assuages our grief, relieves our distresses, and drives away the blues. It rejoices in our joy, upholds our ambitions, and is always ready with a sympathetic understanding of our needs. It stands next to the weather as a safe and sane topic of conversation whether you are conversing with a gossipy neighbor or the stranger within your gates. And not only is the garden a safe subject for conversation, but it will also speak for itself and its presiding genius. At Oshkosh we utilize this fact and during the summer months let the gardens talk.

Liberty H. Bailey has said that to know a flower well, and to grow it well, is more than botany. We say: to know a gardener well is more than horticulture, and we strive to know not only our gardens but each other. We visit our members and let their gardens talk to us.

Our meetings are held the first Tuesday in each month. In winter at the chamber of commerce rooms in the city of Oshkosh. These are just ordinary round table affairs where questions are asked and answered and some one reads a page or two culled from his experience. In addition to this regular programme in Jan. we elect officers. In February we hear and discuss reports from the state meeting. In March we partake of our annual oyster dinner, this at the home of some member. Our last March meeting was with Mr. and Mrs. Ward B. Davis. This charming young couple took pleasure in showing us the many conveniences of their new home, pointing out where they would improve if building again although they had lived but three months in their new home.

May found us scattered over the hot-bed yards of Christensen and Davis. Frame after frame of plants in all stages of development from seedlings just breaking the soil to the finished plant ready for market on the morrow. The men are standing in groups and you hear such words as "water-system," "hot-bed soil," "straw-mats," etc. The ladies are divided some viewing the tulip beds and pansy frames, some clustered about a fine specimen of Forsythia in full bloom, and still another bunch striving to see who can name correctly the most varieties in a frame of seedling annuals just show-

ing their first leaves. At six o'clock we adjourn to the lawn where a picnic supper is served, this followed by music or other entertaining features.

June meeting at N. A. Rasmussen's Fruit Farm. Here were all the small fruits, gooseberries, currants, raspberries, as well as plums, cherries, and apples all covered with half grown fruit and Bordeaux mixture. A fine field of alfalfa, orderly vegetable gardens, sanitary cow and poultry houses filled with blooded stock. The auto truck loaded for the morning trip to market, a new setting of ornamental shrubbery, the well shaded lawn and the handsome specimen of Dutchman's pipe shading the east porch, all spoke eloquently. The children showed me their pansy bed and explained their method which I will give you by slightly changing the nursery rhyme.

There was a young girl named Amanda
Who said When my Papa grows pansies
We pick out the best and then sell the rest
It is much the best way said Amanda.

July finds us at Lake Rest Fruit Farm. Here as usual the men follow the lead of the proprietor J. W. Roe, to the plum and apple orchards, while the ladies are at once attracted by the profusion and variety of bedding plants adjoining the lawn. After these were admired and with the assistance of Mr. Roe's mother classified, they all stroll down the shady lane lined by old apple trees through the vegetable gardens to Lake Rest and along the shore around the point past the harbor and bathing beach, back to the house for the picnic supper.

August a trip by launch up the Fox and Wolf rivers to inspect the garden of the Winnebago County Agricultural School in charge of a young gardener belonging to our society. Here the men discovered, and demonstrated the beginning and the end of the new melon disease, also an onion pest, and a sweet potato patch needing treatment which it immediately received. While the ladies inspected the fine smooth tomatoes which were unusually early and the flowers and ornamental shrubs. Dinner was served in the dining room of the school and the return trip began at sunset.

September at Wm. Nelsons, here the attractions were another new and model farm house which replaced the one destroyed by fire. A promising young commercial orchard, the raspberry plantations, a poultry yard well filled with chickens and geese and last but not least the melon patch. We all gathered on the spacious lawn and sampled the melons then followed the usual supper, music and entertainment.

October at our secretary's Mr. P. Fishers. This meeting I missed but R. J. Coe was present and seemed to be the center of attraction.

November at W. A. Lovells. It was rather late in the season for gardens to talk but the heavy canes of a field of raspberries excited

comment. Some of the ladies visited the country cemetery across the road which furnished a theme for a talk on cemetery planting. The after supper programme was unusually brilliant, consisting of songs by the host, Mr. Lovell and volunteer stunts by all from the gray-haired M. V. Sperbeck down to the children of tender years.

Dear Friends; let us endeavor to induce more people to plant more gardens and if an ill-wind comes our way remember.

"Which ever way the wind doth blow, some heart is glad to have it so, then blow it east, or blow it west, that wind that blows, that wind is best. My little bark sails not alone, a thousand fleets from every zone are out upon a thousand seas, and what to me were favoring breeze, might dash another with the shock of doom, upon some hidden rock; and so, I do not dare to pray for winds to waft me on my way, but leave it to a higher will to stay or speed me, trusting still that he who launched by bark will sail with me and will not fail whatever breezes may prevail to land me every peril past within the sheltering haven at last."

QUALITY FIRST.

MRS. H. H. MORGAN, Madison.

More than a century ago, the Common Law of England recognized the right of the manufacturer to be protected in the use of his name or other appropriate mark or brand in offering his wares to the consumer. This is now known as the Trade Mark.

Every civilized nation now has strict laws securing the manufacturer or producer against unfair competition in the enjoyment of a trade established through the special merit of the particular article offered for sale by him.

No argument need be presented to show the wisdom of thus rewarding the manufacturer or producer for supplying an honest, high-grade product, and at the same time the consumer may know that he is purchasing exactly what he desires.

At the last annual session of our State Horticultural Society steps were taken looking to the adoption of a brand to be affixed to all horticultural products of the state, provided only that the growers using the same keep their fruits or berries up to a given standard. It is hoped that this plan may be carried out as a state-wide policy, however, this is all the more reason why each grower ought first to establish an individual reputation for the quality of his output.

Let him adopt and use a name or brand. The public will soon recognize that A's apples and B's berries are always the choicest. The careless orchard-man, who neglects to care for and develop his trees and who packs without sorting, need not be feared in competition. The berry-raiser who has poor vines, poor berries and whose boxes are scantily filled, will soon find the market closed to him.

The highest business ambition of the horticulturist should be, and eventually will be, to have his name or his brand or trade mark a synonym for sound fruit, carefully packed and of honest measure.

There is no money in flooding the market with imperfect fruit or berries. The cost of producing the highest grade article is but a trifle greater than that of putting out a poor grade. It costs as much to pick a barrel of poor apples as it does to pick a barrel of those that are perfect. The same labor is necessary to haul them; the same transportation rates apply to all grades, but how different is the price received!

As scientific methods ought to be employed by the horticulturist as by the manufacturer. The size of a crop does not measure the profit to the grower. The elements of labor, cost of barrels, boxes, crates, hauling and freight are of vital importance. These charges on one thousand crates of berries are double those on five hundred, and the producer of the thousand may not in fact make a net profit as large as he who sells the five hundred.

The berry grower should govern his fruit acreage in accordance with his ability to promptly pick, crate, haul and market. Thus the best grades of vines and bushes only should be planted and in such manner and numbers that each may receive proper attention.

A heavy crop on a small acreage will be far more profitable than the same number of berries scattered through longer and half cared for rows. The small fruit vine or bush responds remarkably to cultivation and care. Reduce the acreage to be cultivated, pruned and sprayed to the smallest limit possible. A picker in a day can gather fifty per cent more from a few vines loaded with large and firm berries than he can from many bearing sparsely. The labor required in the care of the vines and the picking of the berries is a much larger item than is commonly appreciated. Reduce this to a minimum by concentrating on a limited area and it will soon be discovered that the quality of the crop will improve materially.

Insist that the stock you buy is healthy and vigorous. A diseased strawberry vine or berry bush is not only a poor producer but is also a constant menace to the adjoining plants. I think it takes a woman to be really firm about this. Men are inclined to plant whatever comes, but do not allow it.

Raise only fruit or berries of the highest quality. If you sell direct to the consumer, she will not begrudge paying you a top price. She knows that she is not running the risk of waste and that sound fruit goes much further than poor. If your products are handled by a commission man, he will soon recognize the reliability of your brand and surprise you by paying prices that are fair. The bargain hunter has long since learned that she is merely cheating herself when she carries home second grade fruit or berries for the table, and it has been amply proven that there will always be a demand for the best and that those who want the best are willing to pay for it.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society

SUMMER MEETING, Sturgeon Bay, August 20-21, 1913

MARKETING FRUITS.

F. KERN, Bayfield.

It is absolutely necessary, in order to market a fruit crop successfully to have growers producing that crop, organized. Why? It's the first step in marketing to-day; fruit cannot be handled without organizing.

Before you can sell a crop you must have the assurance that you are going to have the crop to sell and with one hundred unorganized growers to deal with and for, you are not sure of anything, where if they are properly organized and you can depend on fifty acres or one hundred and fifty acres of fruit you have something to offer that will attract buyers and without buyers you have no market. In one of the largest Coast Associations the growers all signed a written contract to deliver all their fruit to the Association for five years. The manager of that Association was able to estimate in advance, the amount of each kind of fruit he would have to offer each year for five years. The fact that they had contracted the entire output to the association for five years was in itself a great selling feature. First it insured quality and quantity. It attracted the markets of the world. They were able to establish selling agencies in all the principal markets at a selling cost of 10 cents per box, where the lowest rate of commission any of the commission houses charge is 10 per cent. Ten cents compared with 10 per cent on western box apples even at a dollar and fifty cents is a saving of fifty per cent of the ordinary selling cost. Wholesale

fruit houses I think much prefer to deal with an organization rather than a hundred individuals.

There are perhaps as many different views on this subject and as many different methods of marketing a crop as there are men in the business. Some Associations believe in consigning everything. I don't. I believe in selling every dollar's worth you can sell and I try to sell our crop and do sell the bulk of it to wholesale fruit dealers. We sell all we can to the retail dealers direct and have gained a very satisfactory trade of this kind.

The first step in marketing after organizing, is knowing what you have to sell. You know then that you will have a good grade and one that is not so good. The next step is to find and interest the buyer. Sell all you can of the best grade and if you are obliged to consign any, consign the B grade. Have territory enough interested in your crop so that you will not have to dump it all in one or two markets and in that way keep your market healthy. The wholesale houses appreciate this. If we put four cars into Minneapolis in a day when the market really only ought to have two the fruit houses are bound to dispose of it and as a natural consequence the price is cut to move the fruit, where if I consign one car each to four different markets they all have a demand for all the fruit they have and are able to get good prices and we as well as the wholesale dealer, profit.

We sell a great deal of fruit direct to the retail trade. The wholesale market establishes the market price. We can at least get as much from the retail dealer, as he would have to pay the wholesale dealer for it, and if we glut the large markets, by dumping too much in a place in one day, the market breaks and the wholesaler shoves out every case he can to the retail dealers throughout the country, and cuts the price to them, and they in turn come back at us with the alarming statement; that they can buy our berries in Minneapolis for less money than we are charging. We have established this cut ourselves through overstocking some one market. The firmer you can keep the large markets, the better prices you can get from the retailer and the more money we will all make. I do not believe that the retail dealer ever makes any money handling berries, but he is expected to have everything in season, and he handles it more for accommodation than for the profit for he is bound to have losses that will offset his profits, and to protect himself from loss he is obliged to sell at a good margin.

In 1911 we had a very remarkable trade with the retail dealers which we worked solely through correspondence, using an attractive strawberry letter head. In 1912 we were obliged to forfeit most of this trade in order to prove to the express company that our business was worth looking after, and this season after being appointed express agent myself, we again started at work to build up an order trade and have succeeded very well by employing a salesman to cover a territory that requires two weeks and we have covered this

territory three times during the entire season and we find it has proven the best selling system we have ever adopted. While it costs some more than circular letters, it is a great satisfaction to know conditions in what we term our territory, and it assists wonderfully in collecting accounts. Through our salesman, we adjusted and settled every complaint on shipments made this season for less than \$10.00, and the cuts and refunds asked from an order trade are by no means a small item.

If we could organize all the fruit growing districts into local associations, and then organize a central association where each local association would contribute its part toward the selling of the crop, we could afford to have the very best salesman on the road to sell our fruit direct to the retail trade and the burden would be borne equally, but under the present marketing system in this state there is very little coöperation if any. Every locality works to sell the crop they are interested in, and if by chance they get into the other fellows territory and find lower prices the remedy seems to be to meet the prices and possibly cut them a little. There certainly is a field for an improved marketing system in this state and in my paper I have aimed to start a discussion.

In my opinion, the first step is ORGANIZATION, the second, quality, and then with proper inspection and an honest pack I believe the question of marketing will be partially solved.

Being on a committee on a State Marketing Association I have given some time and thought to the subject. This question presents itself: How can we organize a state Association to control the distribution of a crop, not for the purpose of getting better prices but for the purpose of better distribution which ultimately means better prices, without being accused of violating that law so commonly referred to as the Anti-Trust Law? That this question can and will be solved, there is no question. In Winnipeg, I witnessed last week a selling system in use by a commission house there that appeared to me to dissolve the anti-trust bugbear. This firm is strictly a commission house that does not buy from any one. Simply handle consignments, and their method appealed to me and I think could be used by any central marketing association. Simply a fruit auction. Not such as the Pool commission houses patronize. No.

This firm holds their own fruit auction, right in their own building, and every buyer who is in the market for a dollars worth or a carload, is on hand at 9 a. m. to bid on his requirements. They handle everything you want to consign, in the fruit and vegetable line and do an immense business and they have for competitors the Nash Houses, perhaps the strongest and best organized chain of commission houses in the northwest, but they are able to handle all that comes. They either unload a car in the house or place a sample of a carload on the floor, from all the cars ready to unload, and a buyer bids on so many crates or boxes or bushels and the

highest bidder of course buys that portion of the car or line. They continue on this car or line until it is all sold or until the trade has been supplied, and take the next car and hold this sale for a limited time and every buyer buys his supply for the day and the sale is closed. They haul away what they have purchased and pay the cash for it and they buy the bad with the good just as it runs. If they buy after the sale closes the seller sets the price.

The manager told me that the buyers had never yet tried to organize to keep the price down, that they seemed to like the plan and preferred buying at auction, where they could see before the sale started just what they were to buy, consider the quality and decide on what they could afford to pay.

I cannot take up any more time explaining this system but it occurred to me that it could be applied to a central selling association, where we could all consign what the Central association could handle, and they could divert and distribute the surplus and in this way the buying public would have an even chance to buy and there could be no discrimination. If one Association could market all the products of all our associations, we certainly would have more equal distribution and that alone regulates the price.

For instance, if Sparta is shipping strawberries to Minneapolis, St. Paul, Duluth, Fargo and Grand Forks at the same time we are shipping from Bayfield, (this seldom happens,) we do not know just where to place a car to advantage, and we consign it to Duluth and we call up the following afternoon to know how it is selling and the house we consigned to tells us the market is bad, that there is a car in there from Sparta, one from Alma Center, one from Sturgeon Bay, and that prices are demoralized. Who is at fault? Every mother's son of us. We should be better organized and know what each district is doing and help to better marketing conditions, instead of going blindly independent and not only hurting our own market but hurting the market for everyone of the shipping districts that are on the market at the same season of the year.

OUR HY-BRED RELATIONS.

W. J. MOYLE, Union Grove.

In the horticultural world at the present time, nothing is occupying the attention of the people more than the results that are produced by hybridizing of fruits and flowers. The hand of man has brought forth many wonderful and marvelous results. Luther Burbank has kept the horticultural press guessing for years as to what next would be produced but much to our regret most of all his productions, originating in a climate much milder than ours, have proved disappointing, when grown on Wisconsin soil. Several years ago, while employed at the Wisconsin experiment station, the writer's attention was constantly drawn towards the fact that we must grow varieties adapted to our conditions.

We had a quantity of Sand cherries fruiting at the Station at that time, Prof. Goff and myself often discussed the possibilities of improving this hardy little cherry. With this thought in mind the writer undertook a series of experiments in budding on this stock other varieties of stone fruits, such as Japanese, tame and native plums, cherries both sweet and sour. Our object at that time was to get stock that would dwarf the tree and thus produce early fruiting. The results of this experiment were most gratifying, as we found that buds took readily to the Sand cherry stock; our anticipations were high of the possibilities presented. At this juncture our connections were severed with the Station forces and the matter was dropped as far as the writer was concerned for the more pressing bread and butter problems of life.

It seems, however, there were other experimenters in the field, who began to realize the possibilities of the Sand cherry as a hardy Mother plant, on which some valuable hybridizing might be done. Notable among these was Prof. Hansen of South Dakota.

When the Compass Cherry, a cross between the Sand cherry and the Native Plum, came into existence at Springfield, Minnesota, everybody laughed and the nurseryman who had the gall to sell it was classed as a charlatan. When the people that planted them, (the final judges), reported, everybody sat up and took notice. It was absolutely hardy and best of all, it began to bear at once and kept it up every year no matter where planted or how trying the conditions.

The Sand cherry blood in this cross, overcame the one great fault of our Native plum, i. e., its uncertainty to bear fruit.

The writer's attention was called to the value of Prof. Hansen's Hybrids by Harlow Rockhill, the ever bearing strawberry man of Conrad, Iowa. We bought the following varieties, Opata, Sansota, Sapa and Cheresota in the Spring of 1912. They all bore a good crop the present season.

The Opata, a cross between the Sand cherry and the Gold plum is a cling stone, green fleshed and greenish brown plum of good size and high quality, fine for eating out of the hand. Everybody should give it a welcome place in their back yard among the currants and gooseberries.

Sapa reminds me of an over grown ox-heart cherry and appeals to me very strongly as it opens the gateway to the production of a plum that will equal the best sweet cherries and thrive in our climate. Fruit good size, round, skin thin and dark flesh, very meaty, of fine quality inclined to acidity, stone parts freely from the flesh. For culinary purposes this plum is unexcelled. They ripened with us the first part of August and we had a difficult job to keep the birds from getting all of them, thus testifying to their value and merit.

Sansota and Cheresota, crosses between the Sand cherry and De Sota plum are ripening at this time; while not of as high quality as the former, they are valuable additions to our fruit list.

We predict that these hybrid Sand cherries and their progeny, will soon be found growing in every well kept garden. They will particularly appeal to the man with a city lot as they require little space and bear early and abundantly.

About 12 years ago, the writer was walking through the nursery grounds of F. K. Phoenix, Delavan, Wisconsin. The old gentleman had passed away a year or two before our visit. Our attention was called to hundreds of Seedling-Rosa Rugosa roses that he had grown. Mr. Phoenix was a horticulturist of high order and was able to see visions and dream dreams of horticultural possibilities, far beyond the sight of ordinary man. The old gentleman was looking for a chance cross with some of our tender roses and by this means hoped to get a rose with the exquisite sweetness and beauty of a Mrs. John Laing, with a constitution and leaf like the Rosa Rugosa. Climatic conditions were against him and fate was very stingy in awarding him.

However, the French have taken up the matter and with their more salubrious climate and advanced knowledge are producing a wonderful race of these hybrid Rosa Rugosa roses.

The one great drawback so far in our estimation to these roses, is they all bloom in clusters, on short stems like the Rugosa with few exceptions. Conrad F. Meyer, a pink, and its sport Nova Zembla, a white, being the only exceptions. These two roses are beauties, hardy and vigorous.

Mrs. Geo. Bruant and Blanche de Coubert are both white semi-double, beautiful buds and absolutely hardy.

Agnes Emily Carmen grows and looks like a rugosa. Beautiful carmine-like color, semi-double and a very desirable rose.

Belle de Potevine another semi-double, blooms in clusters, sweet scented and of an old rose shade.

Roseaie de L. Hay a beautiful rose, great bloomer, flowers a purplish rose, sweet scented and semi-double. Will be planted extensively when better known.

Keep your eyes on the hybrid Rosa Rugosa Roses and try them all.

BETTER HOMES.

MRS. GEO. FRATT, Burlington.

The article in the June number of Wisconsin Horticulture entitled "No Gardens" and mentioning farms without gardens, filled me with compassion for people so unappreciative of their opportunities as to rob themselves of so much of the joy of living; and I long to beckon them out onto a vineclad porch overlooking a bed of bright flowers, and offer them fresh fruit from the berry patch, in an effort to inspire them with enthusiasm for that which is the best part of the home, its garden.

By garden I do not mean the vegetable patch only, but it includes also flowers and berries, and a shady place under a fruit tree. Necessarily in these days of scarcity of help, the care of the garden falls mostly to the lot of the woman of the family, and can and ought by her to be made a recreation from her labors indoors, and a source of pleasure and of health; for there is no better tonic than pure air, and no better way to keep vigorous than the exercise attending the care of a garden.

A friend of mine, a lady much older than myself, who has recently established a new home and an ideal garden in connection with it said to me, "People tell me they think I have enough to do in the house without working the garden, but I tell them the garden is my vacation, and if I did not do a little work in it every day I should not have the health and strength to do my work in the house." I wish I could persuade some who think they are not strong enough to work a garden of the truth of her words, I will give you my own experience in an endeavor to induce some indifferent ones to come out and work for health, pleasure and profit, and help solve that much mooted question of the day, the cost of living, by supplying the table with fresh vegetables and fruit.

When eight years ago we moved from our farm, with all that implies in the way of broad fields, and woods, and orchard and garden, into a new house, on a new lot in a new subdivision of the town, I was confronted with the problem of converting this bare place into something that would seem like real home.

I also felt the necessity of working with judgment, for there was work indoors that required strength, and I had none too much, but much may be accomplished by a few hours work every day, preferably in the morning, if the day is hot, before the sun is up; and any one who has not greeted the awakening day in the garden has missed much of the true joy of living.

Being accustomed to plenty of space and light, my first effort was to purchase the lot adjoining ours on the south, so as to guard against the intrusion of too near neighbors, then, of course I would

have a garden on it and some flowers. The investment was not great, and the value has more than trebled since.

We moved into the house in hot July and fully realized that the first essential was to procure shade. Trees grow but slowly, and though we brought some young elm trees from the farm and planted them that fall, a few years later when our street was graded it was cut down several feet, so that our trees had to be reset, putting them back a great deal, and so they have not afforded us much protection.

Not much could be done the remainder of the year except plan and prepare for spring. These plans included the planting of pear trees in the backyard, thus trying to combine fruit and shade, setting the Kiefer which grows rapidly and tall so as to shade the back porch.

Cherry trees which we brought from the farm also added, and planted on the south side. I planted seeds of Trumpet vine and Catalpa in boxes in the house during the winter, and when time came for setting them out had vines and trees ready, which grew very rapidly; this saved expenses, besides affording an interesting experiment.

I also threw the pits of peaches onto the vacant lot which had been plowed, and the next year some fine trees grew up from them which I with difficulty saved from the plow, the plowman contending that "them's no good; better plow them under and save bother," and was by others laughed at for my pains. However I rescued some, and to protect them planted currants and grapes in row with them and made the plowman plow around them. Then there came a severe winter and killed the trees before they were old enough to bear, so all the good I had of them was the shade they gave while alive. But I had others growing up and a few years later was rewarded by such an abundant crop of such luscious peaches, as to silence all critics, and have kept on growing peach trees ever since.

But I am hurrying ahead of time, for I wanted to tell you of my troubles; we generally like to do so.

The land here was infested with quack or couch grass. I had made the acquaintance of this grass on the farm, and realized the futility of planting anything permanent until it was exterminated. and that in order to do so I must get at the roots; such roots as I pulled out, a yard long, and thick like asparagus, gave proof of the fertility of the soil. This work required several years, for I wanted to raise vegetables and strawberries each year, while doing this, so took it piecemeal, clearing a patch of what I could in the spring, before planting, and again in the fall after vegetables were grown.

The front of the lot was to be devoted to lawn and flowers. My friends, knowing of my love for flowers offered me many, which I set where I could until I had the ground cleared of quack, so I had often to reset plants, and have not finished yet, for every year I see

something that can be changed to make the effect more pleasing, or am getting a few more plants, and keeping up a constant interest in them. My general plan is to have a row of shrubs at the side of the lot farthest from the house, and against this background plant perennials, trying to have something always in bloom, and as most perennials blossom in the spring, I am studying to get some that will bloom later, and am grateful for any suggestions along this line.

A row of tall Iris borders the path between the flowers and the vegetable garden, forming a background also for smaller plants and this bed is bordered by a dwarf phlox which is a mass of bloom very early in the season, and is a delight to the passers by.

Then the tulip bed occupies the space that is in full view of both house and street. This I cover for winter protection with the litter from the flower garden, allowing them to seed themselves, and, when the tulips have finished blooming the bed will be gay with self-sown poppies, candytuft, and later on with the later bloomers, the California Poppies and Cosmos blooming until frost.

A woman likes to make things pay, and not be told that she has no business capabilities, so, when I had some of the ground cleared of quack. I planted a good sized patch of raspberries, and by selling the surplus fruit, soon was reimbursed for all my outlays, and determined to have just one apple tree, thinking that the time to wait for apple trees to begin to bear seemed too long. I will say in this connection that my expenses were not great, for by beginning with a few plants (and these were given me by a neighbor from the prunings from his patch) one can soon increase the number by propagation.

Following hints given in Wisconsin Horticulture I bought a Wealthy Apple, and felt encouraged by its bearing a few years later, to add another, a Yellow Transparent.

Later on reading an offer of a collection of plum trees cheap I yielded to temptation and added those.

By this time I had so many trees and bushes planted that plowing was difficult, and the ground being cleared of Quack, concluded to plant more trees and stop plowing. So my garden grew from a vegetable garden into an orchard.

I planted more cherry trees, some dwarf pear, and one row of apple trees ranging from early to late, the money from the berries covering all expenses.

The apple trees I planted the regulation distance apart, but between two apple trees I planted some of my beloved peach trees, reasoning that they may bear and will die before the apple trees will require the space. I do not know whether this would be approved by Horticulturists, but I like to do a little experimenting on my own account in the home garden.

Failing to excite any enthusiasm in regard to the work of the garden among the members of my family, but finding that they

appreciate the results, I will give you a list of the good things in succession that we have had from my fruit garden this year, though the season has been unfavorable, and the harvest has not made good the promise of the early spring, my first garden being now about 16 years old.

First rhubarb, strawberries following, then raspberries, black and red. Currants, red and white, cherries, gooseberries, apples, plums, 2 kinds, pears, 2 kinds, peaches, 3 kinds, some grapes, melons and tomatoes, besides the vegetables, with a goodly supply of jelly, spiced and canned fruit for winter, and money enough to buy more plants or trees if I find anything more that I want, which I most likely shall before spring. Then we must not forget the gain in health, and the pleasure of it all, nor the pleasure given to others with the flowers which were sent to many a sick chamber, and supplied the decoration on many occasions. But the picking of berries to sell requires much labor and time, and since I have my garden planted and am out of debt on the venture, am planning to reduce the labor, so that I can devote more time to my flowers, and to the study of the care of the trees in regard to pruning, spraying, etc.

To this end I have set out more currant bushes, starting them from cuttings from the old bushes. These do not require much care, the fruit is easily picked and sells readily, and will supply the money necessary for running expenses, then I shall cut down the berry patch to family requirements.

Eventually, when my trees as well as myself have grown older, I expect to allow the grass to grow under them, forming a shady place in which to pass leisure time, thus completing the ideal of a garden, and while my friends and myself are enjoying the shade and the fruit and flowers, I shall by example as well as by precept be an advocate of the home garden.

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